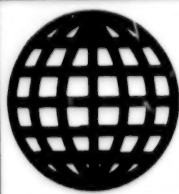


JPRS-TEN-94-020
18 August 1994



**FOREIGN
BROADCAST
INFORMATION
SERVICE**

JPRS Report

Environmental Issues

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Environmental Issues

JPRS-TEN-94-020

CONTENTS

18 August 1994

AFRICA

SOUTH AFRICA

Importation of Toxic Waste 'Effectively Stopped' 3 August	1
---	---

CHINA

State To Introduce Alternative Energy Program Nationwide	2
Two Exhibitions To Be Held in 1995 To Attract Funding for Environmental Projects	2
Environmental Legislation, Enforcement To Be Stepped Up	2
Official Announces 'First Stage' of 'Green Scheme' for 21st Century	3
City in Guizhou Province Using Rubbish To Produce Fertilizer	3
Aerial Seeding Employed for Planting Trees, Grass in Northern Areas	4
Tarim River Valley Faces Desertification; 'Emergency Measures' Being Taken	4
Plans for Protection of Three Gorges Area Outlined	4
Use of Environmental Issues as 'Pretext' for Trade Protection Criticized	5
Researchers Say Qinghai-Tibet Plateau Becoming Warmer	6
Yunnan Province Acts To Protect Plants, Animals	6
'New Method' of Afforestation in Gansu Province Detailed	7
Xinjiang Showing Progress in Fight Against Desertification	7
Beijing Brings Municipality's Soil Erosion Under Control	7
Businesses Pledge To Implement Environmental Practices	8
PLA Issues Procedures for Environmental Protection, Management	8
Columnist Says More Efficient Coal Use Needed To Reduce Pollution	8
Hebei Plant Fined for Dumping Toxic Waste	10
Clean Coal Center Set Up To Cut Pollution	10

EAST ASIA

REGIONAL AFFAIRS

Participants in South Pacific Forum 'Vow' To Stop Overexploitation of Resources	11
Pacific Island Nations Seek Aid From Australia To Halt Rain Forest Destruction	11
South Pacific Forum Leaders Agree To 'Take Action' To Protect Forests, Fisheries	11
Tuvalu Premier Blasts Australia Over Failure To Reduce 'Greenhouse' Gasses	11
Singaporean Foreign Minister Says Linkage 'Unacceptable'	11
Australian Prime Minister Urges Island Leaders To End Misuse of Resources	12
Keating 'Very Concerned' Over 'Unsustainable Logging' in South Pacific	12
Malaysian Minister Says 'Jealousy' Behind Australia's Logging Allegation	12
ASEAN Rejection of Workers' Rights, Trade, Environmental Linkage Viewed	13

INDONESIA

River Contamination Reaches 'Disturbing Level'	13
--	----

JAPAN

Government Signs International Treaty for Conserving Bering Sea Pollack	14
Environment Agency Plans Organization of 'Experts' To Help Developing Countries	14
Accord To Improve Law on Exploitation of Deep Seabed Resources Signed	14
Draft Government Report Says Country Unable To Meet Carbon Dioxide Target	14

SOUTH KOREA

Country Secures Rights To Develop Part of Pacific Ocean Seabed	15
Daewoo Introduces Low-Emission, High-Performance Vehicle	15

MALAYSIA

Joint Wildlife Sanctuary Planned With Indonesia	16
---	----

THAILAND

National Environment Board Urges Ratification of Biological Diversity Treaty	16
Editorial Claims New Regulation To Hurt Environment	17
Experts Differ on Ratifying Biodiversity Convention	18

EAST EUROPE

CROATIA

Power Industry Head Views Krsko Power Plant	19
---	----

SLOVAKIA

'Scheme' for Ecological Projects Part of SPZ Election Program	22
---	----

LATIN AMERICA

REGIONAL AFFAIRS

Southern Cone Environmental Roundup for 18 July	23
Southern Cone Environmental Roundup for 27 July	23

BRAZIL

Environmental Cooperation Agreement Signed With Russia	24
--	----

CHILE

Government Warns Bolivia on Shipment of Toxic Wastes	24
Swiss Deadline for Repayment of Credit Line for Environmental Protection Extended	25

NICARAGUA

Pollution Endangering Managua Water Supply	25
--	----

PERU

Ecuadoran Reports of Maritime Nuclear Contamination Denied	26
--	----

URUGUAY

Government Issues Decree To Control Toxic Substances	26
--	----

NEAR EAST & SOUTH ASIA

IRAN

Official Asserts Country 'Seriously Employing All Means' To Protect Ozone	28
---	----

CENTRAL EURASIA

RUSSIA

Wisdom of Krasnoyarsk Nuclear Plan Doubted	29
Conference Urges Better Antiradiation Protection	30
Tanker Waits Off Vladivostok for Decision on Nuclear Waste	30
Smolensk Nuclear Power Workers Stage 'Open-Ended' Protest Action	31
Expert Says Safe Nuclear Power Engineering Possible	31
Duma Warns Against Neglect of Closed Cities	31
Far East Munitions Dumps To Close; Radiation Threat Denied	32
Agreements on Nuclear Safety 'Finalizes' Process of Withdrawal from Estonia	32
State Inspectorate Warns of 'Real Possibility' of 'Nuclear Disaster'	33
Official Says 95 Percent of Nuclear Theft Reports 'Wrong'	34
Second Radioactive Waste Tanker Set for Towing to Bay of Pavlovskiy	34
Toxic Cloud Formed After Spillage of Rocket Fuel Oxidant in Samara Oblast	35
Kostroma Duma Decides To Resume Work on Nuclear Power Plant Despite Opposition	35
Radiation High at Site of Novonezhino Explosion	35
Muscovites Warned To Avoid Eating Contaminated Fish	35
Environment Pact With Belarus Hailed	35
Foodstuffs Found To Contain Heavy Metals, Antibiotics	37
'Sealing' of Komsomolets' Nuclear Torpedoes Nears Completion	37
Oil Spill at Komsomolsk-na-Amure Refinery 'Contained'	37
Yeltsin Gives Support To Space Crews' Environmental Efforts	37
Closure of Reservoirs Around Chelyabinsk-65 'Top Priority'	38
Plutonium From Komsomolets Could Threaten Herring Fisheries	38
Abandoned Rocket Fuel Oxidant Presents Water Supply Hazard for Polyarnyy	39
Pollution of Moscow River, Possible Cleanup Measures Detailed	39
Ecological Impact of Technological Accidents Discussed	40
High Tariffs on Imported Ecological Equipment Critiqued	45
Country's Ecological Situation Viewed	46

BELARUS

Scientists Refute IAEA's Studies on Radioactive Fallout	47
---	----

KAZAKHSTAN

Premier Denies Uranium Being Sold 'Secretly' to Third World Countries	47
---	----

LATVIA

Poison Gas, Contamination Found at Former Soviet Military Site	47
--	----

UKRAINE

Isotopes Found at Chernobyl Deemed 'Likely' To Trigger Nuclear Blast	48
Official Says Quality of Drinking Water Has 'Deteriorated Considerably'	48
Further on Report of Contamination Found Near Chernobyl	48
Environment Minister Defends Chernobyl's Continued Use	48
Chernobyl 'Emergency' Under Investigation	49
Moroz, Masol Resolve To Keep Chernobyl Open	49
Chernobyl Management Working To Retain Personnel	50
Moroz, Masol Oppose Closure of Chernobyl	50
Plebiscite Indicates 90 Percent Oppose Building New Unit at Zaporozhye	50

WEST EUROPE

FRANCE

Ministries Allow 'Troubled' Superphenix Reactor To Restart	51
Environment Minister Comments on Restart of Superphenix	51
French Consortium Wins Bid To Conduct Feasibility Study on Chernobyl	51
Transport, Environment Ministries Receive Budget Increase	51

GERMANY

'Alleged' Nuclear Dealer 'Negotiating' With Government	52
Kohl Addresses Issue of High Ozone Levels, Speed Limit Question	54
Cleanup of Uranium Dumps on Hold	54
Interim Storage Sites To Be Retained for Radioactive Waste	56
Study Calls German Environmental Research Successes 'Modest'	56
Landfill Clean-Up Being Rethought Due to Cost, Competition	57
Workplace Cancer Risks Said To Be Underestimated	58
Constraints on Trashcan Size, Fees Lead to Illegal Dumping	59
Difficulties in Recycling Electronic Components Detailed	59
Electric Car Testing Continues on Baltic Island of Ruegen	62
Further Steps Taken To Reduce Dioxin Emissions	63
Eco-Tax Reform Called 'Practicable'	64
Legislators See Few Alternatives To Garbage Incineration	65
Deal on Toxic Waste Seen as Solution to Disposal Dilemma	66
State Help for Eco-Investment Detailed	67
Work Underway at Hamburg Polytechnic College on Safe Energy Usage Described	69
BMW Begins Automobile Recycling Network	70

NETHERLANDS

Agrotechnical Institute Invents Degradable Bioplastic	70
ESA Develops High-Performance Solar Cell	71
Experiment With Genetically Altered Bacteria Approved Despite Objections	72

SWEDEN

EU, Swedish Environmental Policy Considered	72
---	----

TURKEY

Turkish-Libyan Ship Fined for Pollution Under New Strait Regulations	74
--	----

INTERNATIONAL

UN Report Says 'Drastic Action' Necessary To Fight Global Warming	75
---	----

SOUTH AFRICA

Importation of Toxic Waste 'Effectively Stopped' 3 August

MB0308200394 Johannesburg SAPA in English 1907
GMT 3 Aug 94

[Text] Cape Town Aug 3 SAPA—South Africa effectively stopped being a destination for toxic waste imports on Wednesday when the international Basel Convention came into force, according to Environmental Affairs Minister Dr Dawie de Villiers. Draft regulations banning the dumping of foreign hazardous waste in the country would probably be gazetted for comment later this month, deputy director-general of hazardous waste Mr Willem Scott said.

In a statement announcing the application of the Basel Convention in South Africa, Dr de Villiers said: "Stricter control following the prescriptions, requirements and procedures of the Basel Convention are now applicable."

Minimum standards for waste disposal sites would also probably be published by the Department of Water Affairs and Forestry in September.

Mr Scott said South Africa joined about 65 countries—excluding the United States of America—in its subscription to the Basel Convention on the control of trans-boundary movements of hazardous wastes and their disposal.

The local regulations would follow international prescriptions. Vessels carrying dangerous waste would have to detail their cargo, all ports of entry and their route.

Such ships also had to notify local authorities if they intended entering South Africa ports.

"We want to know exactly what is going on and will not easily let in ships with dangerous waste on board. In terms of the Basel Convention, there is a complete ban on the export of dangerous wastes from rich to poor countries."

The restriction applying the Organisation for Economic Co-operation and Development countries would be closely monitored in South Africa. There was already a European Union ban on toxic waste exports to Africa.

South Africa had adequate facilities to process locally-generated hazardous wastes, but was unable to take on an extra load from other countries. "We'd then start having problems."

In terms of the convention, signatories have to draft necessary legislation and submit an annual audit of hazardous waste generation. Illegal trafficking in hazardous waste would become a punishable offence and waste management services had to ensure environmentally-sound processing of hazardous waste.

Mr Scott said South Africa would only be able to import dangerous waste for recycling if the reclaimed material had economic value as an essential raw material.

The local regulations also proposed that ships bringing cargoes of dangerous wastes into South African ports be compelled to take out insurance valued at R5 million [Rand].

Mr Scott said the Basel Convention had proved to be difficult to enforce internationally, though the compulsory internal audits should in theory reveal unauthorised waste movement.

State To Introduce Alternative Energy Program Nationwide*HK0508104294 Beijing CHINA DAILY in English
5 Aug 94 p 1*

[Article by Wang Yonghong: "Rural Plan to Tap New Energies to Go National"]

[Text] A three-year experimental project to tap new energy sources in rural China has proved so successful that the government plans to go nationwide with it from the end of 1995, an agricultural official revealed yesterday.

The project, both energy-saving and environmentally friendly, was initially launched in 100 selected counties across the country, according to Bai Jingmin of the Department of Environmental Protection and Energy Development under the Ministry of Agriculture.

Backed by financial and technical support from both central and provincial authorities, the counties focused their efforts on developing such energy sources as wind, solar and bio-gas power, while designing new fuel-saving stoves for rural households.

"The project was prompted by the faster-than-ever rural economic growth, which has caused rural energy consumption to spiral in recent years," Bai said.

Last year, energy consumed in rural areas amounted to 325 million tons of standard coal, accounting for 32 percent of the country's total.

Forty per cent of this power was used for agricultural and industrial production, according to Deng Keyun, deputy director of the department.

Moreover, power consumption in rural areas is growing at 9 percent annually, surpassing the country's energy growth rate, she added.

"It is imperative for rural areas to tap and make best use of rural energy resources such as bio-gas, solar energy, water power, wind power and bio-energy while developing energy-saving practices in order for rural communities to be self-sufficient in terms of their energy requirements, whether household or industrial," said Deng.

To encourage adoption of the project, central government offered some preferential policies and special funds to those counties that tapped new energy resources.

A total of 11.3 billion yuan (\$1.3 billion), from central government loans and local fund-raising, has been injected into the project over the past three years.

In the last two and a half years, the project has succeeded in saving and generating energy equivalent to 80 million tons of standard coal per year—through the widespread use of solar cookers, methane-generating pits, firewood or coal-saving stoves.

Two Exhibitions To Be Held in 1995 To Attract Funding for Environmental Projects*OW0308094894 Beijing XINHUA in English 0803
GMT 3 Aug 94*

[Text] Beijing, August 3 (XINHUA)—China will hold two exhibitions next year as part of its bid to augment pollution control and environment protection.

This was announced by a recent preparatory meeting for the second national show of the Environmental Protection Industry and the Fourth International Environmental Protection Exhibition, according to NEWS ON SINO-FOREIGN FUNDED ENTERPRISES.

China now has more than 4,000 environmental protection enterprises or institutions, with a joint annual production value of 8.3 billion yuan (nearly 1 billion U.S. dollars), which is growing an annual rate of 20 percent, the newspaper says.

However, the paper quoted Xie Zhenhua, director of the State Environmental Protection Bureau, as saying that development of the industry still lags far behind the need of environmental protection in China.

Pointing to what he called "vast potentials in China's environmental protection industry," Xie described a purpose of the two shows as to attract foreign funds and advanced technology.

Environmental Legislation, Enforcement To Be Stepped Up*OW0308094994 Beijing XINHUA in English 0909
GMT 3 Aug 94*

[Text] Beijing, August 3 (XINHUA)—China's industrial development policies will have to be defined in line with new rules in a series of the country's environmental laws to be revised over two years, a top environment official said.

This is China's latest effort to curb environmental pollution, the LEGAL DAILY quoted Xie Zhenhua, director of the State Bureau of Environmental Protection (SBEP), as saying, in addition to putting more money into environmental protection.

Xie said that his bureau is revising laws to prevent and control air pollution, water contamination, noise pollution, and the management provision on natural environment protection zones.

They are expected to be submitted to the legislature for approval by the end of next year, he said.

The revised versions will cover procedures in industrial production and set new and specific environmental standards.

Steps for punishing severe polluters have also been added to the new drafts, besides economic and administrative measures, according to the director.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Xie disclosed that new laws are being drafted to control solid wastes and harmful and poisonous materials.

However, he claimed that the country has set up a relatively comprehensive legal system for environmental protection.

It includes specialized environmental laws, such as the environmental protection law and the ocean and sea environment protection law, and laws closely related to the environment, such as the Forestry Law and the Law on Wildlife Protection.

There are also more than 20 administrative provisions concerning the environment, some 310 national environmental criteria, and various local regulations, according to the daily.

China is at the same time stepping up efforts in implementing these environmental laws. The Environmental and Resource Protection Committee of the National People's Congress every year sends inspection delegations across the country to check on the implementation of environmental laws.

This year's inspection tour, which started in April, will cover 10 provinces, municipalities and autonomous regions, up from seven last year, according to earlier reports.

Xie also told the LEGAL DAILY that his bureau will make further efforts in administrative law enforcement to reduce pollution to a minimum.

Official Announces 'First Stage' of 'Green Scheme' for 21st Century

HK3007081894 Hong Kong EASTERN EXPRESS
in English 30 Jul 94 p 8

[By Bruce Gilley]

[Text] China yesterday announced a US\$4 billion (about HK\$31 billion) [Hong Kong dollars] environmental protection plan and pledged that the Deng Xiaoping inspired blueprint would not damage economic growth. The 62 projects covering nine priority areas make up the first stage of China's green scheme for the 21st century, said Gan Shijun, a director-general of the State Science and Technology Commission.

"Making sure this plan does not interfere with our high-speed economic growth is one of the greatest difficulties of implementation," Gan said. "China is not like developed countries. Its economy must grow fast in order to protect the environment. "I don't have any direct contacts with Deng Xiaoping, but I know that his daughter, Deng Nan, supports the plan."

Gan said the ambitious 9 percent annual growth target mapped out by China for the 1990s would not be affected by the plan. "This just requires an adjustment to our economic structure. It will not effect growth," he said.

Hong Kong conservationists expressed dismay at Gan's remarks, saying China was looking on green issues as just another way to make money. Ng Cho-nam, the vice-chairman of the Conservancy Association, said: "I'm very disappointed. They seem to be concerned only about whether this might open up new business opportunities. "Ninety percent of the plan is pollution-control projects which will attract overseas investment. "They are giving no attention to conservation because it does not generate income."

Hainan province's 20 nature reserves had been forced to break even except for salaries since the beginning of this year, forcing staff to plant crops in the precious rainforests in order to protect the reserves Ng said.

The plan outlined by Gan calls for US\$1.6 billion in international aid, or 40 percent of the total cost for the first stage. One of the key targets of the plan is big city water pollution. More than 80 percent of rivers in cities in China are polluted, while only 15 percent of household waste water is treated. Solving the problem involves importing foreign water treatment plants and investment in high-tech pollution industries with big spin-offs. "Urban schemes like this are only part of the problem. The plan does not address the key problem in rural areas, which is land degradation," Ng said. "Local governments find it hard to strike a balance. They will opt for growth when faced with a choice," he said.

City in Guizhou Province Using Rubbish To Produce Fertilizer

OW0108064794 Beijing XINHUA in English
0611 GMT 1 Aug 94

[Text] Beijing, August 1 (XINHUA)—Anshun city in southwest China's Guizhou Province has developed a technique using urban rubbish to produce compound fertilizer, according to sources close to the department of public health under the city government.

The department has invested one million yuan (115,000 U.S. dollars) in building a compound fertilizer factory, which makes use of 100 tons of urban rubbish and 40 tons of night soil daily to produce granulated compound fertilizer, which contains 32 percent of nitrogen, phosphorus and potassium.

The compound fertilizer is safe and up to national standards.

By using the new technology or adding a special kind of bacterium that helps increase the temperature to about 100 degrees centigrade during the fermenting process, the materials are easily decomposed and all pathogenic bacteria and eggs of parasites are killed. Moreover, the technological process does not pollute the environment.

The fertilizer produced by using this technique is highly effective in promoting the growth of farm crops, vegetables and fruit trees. They are also able to improve the soil.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Aerial Seeding Employed for Planting Trees, Grass in Northern Areas

*OW0108133994 Beijing XINHUA in English
1254 GMT 1 Aug 94*

[Text] Yinchuan, August 1 (XINHUA)—Over the past 15 years China has planted trees and grass by way of aerial seeding on 600,000 ha of land in its northeastern, northern and northwestern areas (three norths).

Information from relevant departments reveals that trees and grass have now grown on 500,000 ha of the land, greatly improving the biological environment of the three norths' mountainous areas and deserts.

Aerial seeding is now widely used in China's afforestation drive, as the cost of growing trees by aerial seeding is only one third of that done by hand.

Aerial seeding has achieved marked biological and economic results. Aerial seeding for about nine years has helped plant grass on 90,000 ha of land in Yulin Prefecture in northwest China's Shaanxi Province.

Sizeable areas of oases are now available in deserts of the three norths because of aerial seeding, which not only helps reduce wind speed and evaporation and improves humidity and the organisms in the soil, but also helps bring back some wildlife.

The land where aerial seeding has been introduced in Ih Ju League in the Inner Mongolia Autonomous Region produces 200,000 tons of fresh grass a year, creating an additional 2.2 million yuan in output value for the local animal husbandry.

China's success in aerial seeding has aroused attention worldwide. In this regard, delegations of experts from more than 40 countries and international organizations have come to inspect the three norths.

Tarim River Valley Faces Desertification; 'Emergency Measures' Being Taken

*OW0108171094 Beijing XINHUA in English
1247 GMT 1 Aug 94*

[Text] Urumqi, August 1 (XINHUA)—The Tarim River Valley, the single green corridor linking the vast southern part of the Xinjiang Uygur Autonomous Region with the outside world, is facing an imminent invasion from the deserts to its north and south.

Ecologists in this capital of the region said it would surely be an ecological disaster for the whole of northwest China should the 330,000-sq [square]-km Taklamakan and the 25,000-sq-km Kuruk Deserts meet one day on the 1,000-year-old forest belt between Korla City at the west end and Ruqiang City at the east end.

And gone with the corridor would be the habitat of more than 100,000 people, as well as the billions of yuan China has spent on exploiting the oil in the basin.

Official records show that the flow in the lower part of the Tarim River is only one third that of ten years ago, leading to a large drop in the water table.

Throughout the corridor, drought has claimed 67,000 ha [hectares] of trees and shrubs, and 33,000 ha of farms and pastures. Seventy percent of the corridor has been devoured by the worsening desertification, according to official figures.

The Taklamakan Desert is pressing forward at a rate of about 10 m [meters] a year, and the Kuruk Desert at a rate of five m a year. Scientists at the China Academy of Sciences estimate that if the trend continued, the green corridor would be completely wiped out within 20 years.

The danger has alarmed the Chinese Government, which listed the protection of the corridor among the top projects for desert control in 1991. The regional government has set up a Tarim Valley Administration to coordinate the work.

Emergency measures are being taken. Official sources said the government will try to divert 300 million cu [cubic] m of water from Kuoque River to the corridor every year. A 130-km-long sandbreak forest will be built against the Kuruk Desert, and another along the 400-km highway across the corridor.

Experts from the Academy of Sciences suggest that the government adjust the economic structure in the upper and middle parts of the Tarim Valley to reduce water consumption, so that an additional 300 million cu m of water can be saved for the lower part every two years.

To protect the vegetation, the experts suggest that the government administer harsher punishment to those who engage in illegal felling of trees, and speed up developing solar, wind, coal and other forms of energy to save precious vegetation from being burnt by farmers as cooking fuel.

Plans for Protection of Three Gorges Area Outlined

*OW0208133894 Beijing XINHUA in English
1307 GMT 2 Aug 94*

[Text] Beijing, August 2 (XINHUA)—The Chinese sturgeon, believed to have been inhabitants of the Chang Jiang River for over 140 million years, will not necessarily move away from their cozy home. China plans to protect the habitats of six kinds of rare aquatic animals in the Three Gorges area of central China.

Other rare aquatic animals like the Chinese paddlefish, Chang Jiang sturgeon and the Chinese river dolphin are also listed on the protection schedule.

This was revealed in an article co-authored by Zhang Guangdou and Pan Jiazheng, academicians of the Chinese Academy of Sciences and the Chinese Academy of Engineering, respectively.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Artificial propagation will help increase the numbers of these creatures.

Professors Zhang and Pan pointed out that China is to set up nature reserves in the area to protect rare plants and ancient trees. A total of 199 ancient trees are on the top of the list of the protection plan.

The protection expenditure will be shared between the nation's scientific research bodies and the Three Gorges Construction Group before it is accounted as part of the electric power cost when the power station begins operation.

The total installed capacity of the Three Gorges Power Station will be 18.2 million kw. With an expected annual output of 84.2 billion kwh, the power station will be the largest of its kind in the world.

The construction of the reservoir will submerge 19 counties with a total population of 725,000, which will increase to one million by the time when the reservoir is finished.

According to the experts' suggestion, the agricultural structure of the Three Gorges area must be rearranged. Farming must not destroy the ecological environment. Processing industries and tourism, which cause less pollution should be encouraged.

Plans and specific measures have been worked out to move and protect 44 cultural relics that would otherwise be inundated.

On the possibility that the Three Gorges Project might cause earthquakes, the two academicians drew a negative conclusion after analysing the geological nature of the area around the reservoir.

Zhang and Pan also noted that the water level of the Three Gorges will be dozens of meters higher than its present level. Most peaks along the Three Gorges, however, are around 1,000 meters above sea level, so the original scenery of the Three Gorges will not be changed much.

Zhang and Pan were leading members of the major scientific and technical study group of the Three Gorges Project, which worked from 1956 to 1991.

Use of Environmental Issues as 'Pretext' for Trade Protection Criticized

*HK2907122994 Beijing RENMIN RIBAO in Chinese
29 Jun 94 p 6*

["International Jottings" column by Shan Ren (1472 0086): "Do Not Practice Trade Protectionism Under Pretext of Environmental Protection"]

[Text] The earth, on which our existence depends, is threatened by increasingly serious environmental pollution. Strengthening cooperation to protect the home of human beings is the responsibility of all countries in the world.

However, a new tendency has emerged in the field of environmental protection in recent years: Under the pretext of environmental protection, some developed countries have restricted exports from developing countries. Some have prohibited purchases of paper pulp and paper made with wood from forests in developing countries. Others do not allow imports of agricultural produce because residual pesticides do not meet health standards set by them. Under the pretext of environmental protection, some countries have even threatened to impose trade sanctions against the countries concerned. Evidently, these practices deviate from the correct track of environmental protection. Besides, they cannot but cause doubts about their real intentions.

According to a report, "the promotion of exports of environmental protection technology has become an important goal in the trade policy of developed countries." In 1991, the volume of U.S. environmental protection technology exports was as much as \$1.7 billion. The United States and other developed countries have achieved a "relatively large foreign trade surplus" in the field of environmental protection technology. That some developed countries export environmental protection technology is of course conducive to the cause of environmental protection, but using unrealistically harsh terms to restrict exports from developing countries and to impede their trade development is clearly the promotion of trade protectionism in disguise.

As we all know, the developed countries should be held mainly responsible for the global pollution of the environment. This is because in the course of the development of the industrialized countries over several hundred years, they, under the slogan of free competition, have always regarded competing with each other to seek the greatest profits as their goal. While developing and maintaining a high-consumption society by means of a high degree of industrialization, they have seriously polluted the environment. It is only a few years ago that they really began to pay attention to environmental protection. Even if we view the existing situation, they remain the major countries polluting the human environment. The U.S. Christian Science Monitor once objectively pointed out: Toxic discharges "are serious in the industrialized countries" and "the United States is the biggest polluter in the world." The U.S. "population only accounts for 4.7 percent of the world, but the United States consumes 40 percent of the world's oil. It ranks first in the world in the discharge of industrial waste gases, accounting for about 20 percent of the world total."

Of course, the developing countries are also responsible for protecting the environment and should draw lessons from the developed countries. They should pay attention to the environment at the beginning of their industrialization. However, the first problem some developing countries have to solve is still the problem of subsistence. At present, they lack the necessary economic foundation

for earnestly solving the problem of environmental protection. Therefore, the developed countries, which possess the funds and technology, should do more for the developing countries in environmental protection. Besides, environmental protection is a global problem and it can hardly be thoroughly solved if attention is focused only on a single country or region. The German Chamber of Industry and Commerce wisely holds that "the industrialized countries should help the developing countries eliminate damage to the environment instead of spending more and more on marginal environmental protection in their own countries."

In short, a solution to the global environmental protection problem depends on the concerted efforts of all countries in the world. It is unwise to build a "comfortable home" in one country alone. It is even more unfair to practice trade protectionism against developing countries under the pretext of environmental protection.

Researchers Say Qinghai-Tibet Plateau Becoming Warmer

OW2807131794 Beijing XINHUA in English
1251 GMT 28 Jul 94

[By Li Xiguang]

[Text] Lhasa, July 28 (XINHUA)—The Qinghai-Tibetan plateau, which is known for its icy mountains, is becoming warmer under the impact of the global "greenhouse effect."

Glaciers appear to be shrinking, lakes drying, frozen land melting, and grasslands coming under the threat of desertification, researchers said.

More and more sand and dust are rising from the dried riverbeds to form sand dunes along the riverbanks of the Yarlung Zangbo and the upper reaches of the Yellow River.

Over the last decade, the water level of Lake Yamzhog Yumco in southern Tibet and Lake Nam Co in northern Tibet have been dropping by six centimeters a year while the water level of Lake Qinghai in northern Qinghai Province has been dropping by 10.5 centimeters yearly over the last three decades, according to observation data gathered by scientists over recent decades.

Researchers explained that shrinking glaciers which supply water to the lakes have been the main cause for the drop in water levels.

Observation over the past three decades shows that the glaciers on the northern slope of Mount Qowowuyag had shrunk by 2,000 meters and the skirts of the glaciers thinned by 30 to 40 meters.

Some glaciers on the western Kunlun Mountains and Tanggula Mountains also have shrunk by 400 to 500 meters, according to the observation.

"The Qinghai-Tibetan plateau is most sensitive to the change of global climate," said academician Sun Honglie, chief scientist of the State Qinghai-Tibetan Plateau Research Project.

"When our planet becomes warmer by two to three degrees Celsius, this part of the world will become warmer by four to five degrees," he said.

The Chinese scientist expected the Qinghai-Tibetan plateau to become warmer by three to five degrees Celsius by the middle of the next century if the amount of carbon dioxide in the atmosphere doubles.

"The amount of rainfall will increase by 20 percent over the same time," he added.

Scientists believe that the climatic changes on the Qinghai-Tibetan plateau will have an ecological impact on the land.

"The melting of frozen land in the middle and eastern part of the plateau could lead to desertification of the land, and rising temperatures in the northwestern part of the plateau could lead that part of the land to desert and wilderness," he said.

"The climatic change, such as more rains, could increase the potential productivity of the vegetation of the land, but the extreme climate will become more unpredictable and will cause various kinds of natural disasters," Professor Sun said.

"The plateau is so sensitive to global change, any signs of climatic changes will be felt years later in other parts of China and the earth's northern hemisphere," he noted.

"It is imperative to study and predict the interaction of the ecological changes of the Qinghai-Tibetan plateau and global change," he said.

According to the Chinese scientist, the State Commission of Science and Technology and the United Nations Development Program (UNDP) have joined the Chinese scientists' efforts to make the eco-environmental problem one of the top priorities on China's 21st century agenda.

"We will find means for sustainable development for the region's agriculture and husbandry," Sun said.

Yunnan Province Acts To Protect Plants, Animals

OW2807084794 Beijing XINHUA in English
0823 GMT 28 Jul 94

[Text] Beijing, July 28 (XINHUA)—Southwest China's Yunnan Province has set up 92 nature reserves to protect plants and animals, according to the "CHINA ENVIRONMENT NEWS."

These reserves cover 1.946 million ha, accounting for 4.94 percent of the provincial territory and ranking first in the country.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

The professional newspaper noted that the provincial environmental protection agency set up an appraisal committee last year to streamline the relations between the environmental protection departments and related organizations, and form an administrative system to supervise the environment.

In addition, the committee has worked out rules and measures to standardize the running of the nature reserves.

As a result of setting up nature reserves, the number of black-necked cranes wintering in Yunnan last year exceeded 1,200.

At present, the province has 161 species of wild animals and 151 plants under state protection. The number of rare plants accounts for 42.6 percent of the country's total.

'New Method' of Afforestation in Gansu Province Detailed

OW2807083494 Beijing XINHUA in English
0815 GMT 28 Jul 94

[Text] Lanzhou, July 28 (XINHUA)—Afforestation researchers in northwest China's Gansu Province have found a new method that has enabled them to grow trees on an extremely dry plateau over the past few years.

The researchers, from the Gansu Arid Land Afforestation Research Center, said that with the method they have planted 150,000 trees on five formerly bare mountains and gullies near this provincial capital.

Though afforestation efforts had never ceased over the previous few decades, the researchers said, an average rainfall of mere 180 mm had made all their efforts futile and left all the hills as bare as before.

After the center was started, in 1984, the researchers began to experiment. They identified the rain-collecting areas of the hill slopes, lined the bottoms of them with waterproof materials and then dig small pits to plant trees.

In this way, the researchers said, they can reduce the rain water loss to the minimum and collect about 0.3 cu m to 0.6 cu m of water in each pit a year, which is enough for a sapling to survive.

The researchers have also been trying to find the types of trees that can best survive in dry conditions. They have found some ten species so far, including pea shrub, oriental arborvitae, tamarisk, calligonum and ammopiptanthus mongolicus.

By collecting more water and finding the right trees, the researchers said, they have attained a survival rate of 70 percent to 80 percent on the 170 ha of arid land they have turned green.

Xinjiang Showing Progress in Fight Against Desertification

OW2807070894 Beijing XINHUA in English
0644 GMT 28 Jul 94

[Text] Beijing, July 28 (XINHUA)—Northwest China's Xinjiang Uygur Autonomous Region has made progress in the fight against desertification by relying on the latest scientific means.

As two-thirds of China's deserts are in Xinjiang, the region has a total of 423,000 sq km of desert.

In the 1960s desertification ruined more than 6,600 ha of farmland, which forced some local people to emigrate.

Since then, scientific inspection teams have been organized by the China Academy of Sciences to help the local people carry out nearly 1,000 projects to fight the desert invasion and plant trees, as well as construct railways and highways and develop the oil industry, according to today's overseas edition of the "PEOPLE'S DAILY."

Some research institutes dealing with forestry, deserts and transportation in northwest China have made progress in controlling and preventing desertification, especially as far as desert highways are concerned.

Some 14 modern desert research stations have been set up in Xinjiang in places such as Turpan, Lop Nor Lake and Qira.

They have set up comprehensive protection systems by planting trees, bushes and grass.

For example, Qira county, the county seat of which had been forced to move three times by desertification, has gained back 1,066 ha of land and 2,200 ha of grassland and cultivated over 330 ha of waste land.

Beijing Brings Municipality's Soil Erosion Under Control

OW2707135394 Beijing XINHUA in English 1302
GMT 27 Jul 94

[Text] Beijing, July 27 (XINHUA)—Beijing has harnessed soil erosion on an area of 3,642 square kilometers or one-fifth of its total area.

To bring the municipality's soil erosion under control, the Chinese capital city has built 20,000 hectares of terraced fields, 0.026 hectares per capita among farmers in mountainous areas. The city has also planted 200,000 hectares of tree belts for soil and water conservation.

The effort has brought noticeable social and economic benefits to Beijingers, marked by improvement of production conditions and growth of labor productivity.

One township in the city's Pinggu county invested a total of six million yuan to build forestry shelterbelts, plant fruit trees and construct five pig-raising farms, pushing the per capita income to 3,500 yuan last year.

A recent investigation by the municipality shows that the soil erosion control projects in the city have resulted in a cut of 70 percent of sedimentation and increased the fertility of farmland by three percent.

Meanwhile, the efforts have boosted the percentage of land covered by forest and grass by 30 percent and have helped cut flood peaks by 50 percent.

Businesses Pledge To Implement Environmental Practices

OW2607173494 Beijing XINHUA in English
1528 GMT 26 Jul 94

[Text] Beijing, July 26 (XINHUA)—Today representatives of Chinese enterprises made "the Declaration of Chinese Enterprises' Development", expressing their close attention to the world's environment and their great efforts to realize the sustainable development in society, economy and the environment.

In the declaration the enterprises and experts who attended the first Chinese green scientific and technical enterprise forum said that Chinese enterprises have paid close attention to the global and their country's environmental situations, have the courage to challenge environmental pollution and the backward economy and technology, and are willing to hold the responsibility and duty to improve the global environment.

The declaration indicates that the environmental crisis is directly caused by social and economic activities. It arises in economic development and can only be solved through such development. Chinese enterprises will gradually adjust their development strategy, renew their ideas and make the development sustainable.

The representatives actively support and are responding to China's 21st century agenda drawn up by the Chinese Government, bearing the relevant responsibilities and obligations, approving the idea of sustainable development and drafting Chinese enterprises' 21st century agenda.

They promise to observe the state industrial policy and laws on the protection of the environment and resources. They will adopt green technology, develop green products, pursue clean production, promote green consumption, and establish a green market.

Meanwhile they will abide by all the international green pacts, increase green trade and play an important role in enhancing global sustainable development.

The first Chinese green scientific and technical enterprises forum opened yesterday. Zhou Guangzhao, president of the Chinese Academy of Sciences, was present at the meeting.

Zhou called for green technology to be brought into the general planning of Chinese science and technology and be applied to reconstruction of industry for the 21st century.

He thought the positive response of enterprise circles to China's 21st century agenda is a key premise for the strategy to be carried out. If the enterprises can adapt themselves to the increasingly green international market, China is to face a green 21st century.

PLA Issues Procedures for Environmental Protection, Management

OW2207204294 Beijing XINHUA Domestic Service
in Chinese 1015 GMT 12 Jul 94

[By correspondent Tan Huaichun (6151 2037 2504) and reporter Cao Zhi (2580 2535)]

[Text] Beijing, 12 Jul (XINHUA)—The General Logistics Department of the People's Liberation Army (PLA) recently issued the "Procedures for Environmental Protection and the Management of Military Enterprises" and the "Procedures on the Environmental Protection Responsibility System for Persons in Charge of Military Enterprises" to logistics departments at and above the army level and to military-run enterprises. This is another important step by the military toward establishing a legal foundation for and regularizing environmental protection work.

The first procedures consist of 32 articles in five chapters. They define military enterprises' basic environmental protection tasks and responsibilities, and they set guidelines for the prevention, management, and monitoring of pollution and for giving rewards and imposing punishments. The second procedures place the environmental protection task directly on enterprise leaders' shoulders. The procedures' eight articles and provisions define the responsibility, authority, and obligation of the legal representatives of military enterprises for their units' environmental protection work, and they set the standards for giving rewards and imposing punishments. The two procedures are supplementary regulations to the "Environmental Protection Regulations for the People's Liberation Army." The establishment and enforcement of the two procedures represent a new step toward establishing a legal foundation for and regularizing the environmental protection work of military industry and the PLA's repair troops (squad), guesthouses, and hotels.

Columnist Says More Efficient Coal Use Needed To Reduce Pollution

HK2507062794 Hong Kong EASTERN EXPRESS
in English 25 Jul 94 p 9

[Article by Patrick O'Reilly, specialist researcher in energy in China: "Clean Coal Can Reduce Pollution"]

[Text] In arguing for a massive expansion of China's nuclear power programme as an answer to China's energy crisis and environmental pollution, Robert Delfs managed to confuse a number of environmental issues and avoided what is probably the most important consideration to the Chinese themselves: the cost of it all.

Delf's argument was as follows: At present, 75 per cent of China's commercial energy comes from burning coal. Demand for energy in China is growing prodigiously and growth rates suggest that it will surpass the United States as the world's biggest consumer of energy by 2017.

The air and water pollution currently poisoning China and the region comes from the sulphurous effluents of fossil fuels—burning coal. Activists grossly exaggerate the impact that conservation measures and energy saving technology can have for developing countries. So without a serious expansion of nuclear power, China will burn more coal, causing more pollution which will be a disaster for China and everyone living there. Nuclear power cannot replace coal in China, but it can reduce the additional amount of coal needed.

The first distinction that needs to be made is between energy production and electricity generation. Electricity is a form of energy, but it is not energy per se. Coal accounts for 69 per cent of China's poisonous particle emissions, but the reason why this is so high is that less than one-quarter of the coal used in energy production is used for generating electric power! Beijing, for instance, consumes more coal than any other city in the world and 80 percent goes for heating domestic households and for cooking. Coal is indeed a culprit in causing environmental pollution but not necessarily the coal burned by power stations. That is why the big environmental debate in Beijing right now is about cooking stoves not power plants.

Less than one-fifth of Chinese coal is washed because this would increase costs; as a result, cheap domestic coal is dirty and burns badly, causing pollution. What though of industry? It is true that industry emits more sulphur dioxide from burning coal than does domestic consumption. However, domestic emissions do more harm to urban populations due to the use of small household chimneys.

Still, China's heavy industries relying on outdated plants with poorly maintained coal furnaces and antiquated industrial boilers, have a lot to answer for. In China, 431 grams of coal are burnt for every kilowatt hour of energy produced—100 grams more than developed countries, so it is not correct to say that potential savings are grossly exaggerated by environmental activists. Currently, coal consumers tend to use whatever coal they can get their hands on, regardless of whether it is appropriate. The ash content of much of the coking coal used in the steel industry is so high that some enterprises received permission to import better quality supplies from Australia.

Using Chinese coal, it has been estimated that steel production required 40 per cent more energy than in the West, cement production 66 per cent more and ammonia 83 per cent more. So while coal may be the culprit, does it mean that an expansion of the power generation industry based on coal would inevitably mean an increase in pollution? The answer is "no" for a number of reasons. I am not pretending that coal burning

power stations have not been a major cause of air pollution. However, the thermal power plants that are guilty of poor environmental standards are the older ones, often dating back to the 1950s and 1960s using Russian technology.

China's modern plants are far more efficient and environmentally sound. Furthermore, China's power generation industry now has access to the nation's best coal with sulphur emissions of only 1 percent. The power industry is also upgrading older plants adding precipitators and scrubbers to reduce emissions and thus pollution. Furthermore, China is doing feasibility studies on importing the West's latest integrated gasification combined cycle (IGCC) technology which if adopted would meet the highest environmental standards.

As both the coal and energy markets become deregulated, it becomes simply uneconomic not to use the best, most efficient coal as well as ensure that your plant is cost-efficient. Simply put: to allow pollution at modern power stations is a waste of money. If, as we are told, joint venture build-operate-transfer (BOT) plants are the future of China's power generation industry, you can be sure that they will meet every international environmental standard. Ironically, the biggest obstacle in the way of thermal power generation is not poor coal and pollution problems, but transportation. China's overburdened transportation system just cannot cope with the increase in demand for coal and whether it will be able to get the volume of coal needed to the power stations from the coal fields is doubtful.

What of nuclear power, then? Delfs suggests that China must have access to the most advanced nuclear technology. It does. What it is not willing to do, however, is pay the price. Nobody is stopping China from importing the most modern nuclear plant, but the Chinese themselves recognise that they cannot afford it. For example, the installed plant cost of the non-nuclear IGCC technology that China is now considering buying from the U.S. is about U.S.\$900-1,500 (HK\$7,020-\$11,700) [Hong Kong dollars] per kilowatt. A standard nuclear pressurised water reactor (PWR) can cost between U.S.\$2000-2500 per kilowatt. The cost of a significantly expanded nuclear industry would be astronomical. As it is, the government is hoping that half the funding for China's next nuclear plant at Lingao in Guangdong is going to come through revenue raised by the Daya Bay nuclear plant.

Given a market economy, the cost of electricity produced by nuclear power would be more expensive than that of thermal generation and the government does not have the money to foot the bill. Delfs makes the point that the U.S. has 560 nuclear plants supplying 20 per cent of that country's electricity. If China does indeed surpass the U.S. in energy consumption sometime between 2008 and 2017, is he really suggesting that China should have hundreds of nuclear plants by then? The year 2008 is only 14 years away. I have no doubt that

China can produce as good a nuclear engineer and technician as any other country, but it takes time and experience to build up from a few small nuclear plants to an industry comparable to that of France or the U.S. China is just not ready for it, it cannot afford it and the Western capital markets and world banks will just not finance it.

So what is the answer to China's energy crisis? There is no easy answer. China's hydroelectric potential is significant, though like nuclear power its costs are prohibitive. Though Deffs points out that it only provides 4.5 per cent of China's commercial energy, it also accounts for more than 20 per cent of China's electricity. Sixty-five hydroelectric power plants are being planned in the southwest alone, and financiers and foreign companies are far more at ease—as are the Chinese themselves—with tackling hydroelectric projects than considering the nuclear option. More resources must be devoted to hydroelectricity and significant investment must be made in developing transmission lines and integrating regional grids.

However, none of this will decrease environmental pollution. This will only come from upgrading the whole industrial infrastructure so that it becomes more coal energy and electricity efficient and conforms to China's own environmental protection laws. Domestic coal will have to be washed and gradually electricity will have to replace coal for heating and cooking. Unfortunately even if all of this is achieved, China will still have a long way to go to reverse decades of environmental neglect, but it will be a start.

It looks, therefore, like coal is going to remain king for the foreseeable future, and the expansion of the nuclear industry is not the answer. At the end of the day, even if China can stick to its own nuclear blueprint—which is questionable—nuclear energy will provide no more than 6 percent of its electricity by 2020. That is probably the way it should be.

Hebei Plant Fined for Dumping Toxic Waste

40101010C Beijing CHINA DAILY in English
27 May 94 p 3

[Article by Zhu Baoxia: "Hebei Plant Fined for Dumping Toxic Waste"]

[Text] In the most serious environmental case in Hebei, provincial officials have fined a chemical factory 90,000 yuan (\$10,300) for discharging toxic waste.

The No 5 Chemical Factory under the Applied Chemical Company in Langfang, a city between Beijing and Tianjin, is also likely to be brought to court and forced to pay compensation to victims of the waste dumping.

The factory has until June 5 to pay the fine, said Wang Junhe, director of the provincial environmental protection bureau.

Local officials discovered in February that the factory had dumped 227 drums of phosphorus sulfide along

mountains in Hebei Province and into rivers in Tianjin municipality. Each barrel contained 100 kilograms of the poisonous chemicals.

The first 20 drums were uncovered on February 22 in the Ziya River in Tianjin's Xiqing District—a major source of drinking water for residents.

The local government immediately channeled river water to the Luanhe River to clean up the contaminated Ziya. No cases of water poisoning were reported.

Another 33 drums of waste were uncovered in the rivers and irrigation canals in Wuqing county, Tianjin.

Wang said the local government is preparing to sue the director and vice directors responsible.

It is estimated compensation to local residents could be more than 1 million yuan (\$114,000).

Clean Coal Center Set Up To Cut Pollution

40101010A Beijing CHINA DAILY [ECONOMIC]
in English 6 Jun 94 p 2

[Article by Tian Ying: "Clean Coal Center Set Up To Cut Pollution"]

[Text] The China Clean Coal Engineering Research Center has been set up in a bid to cut down the pollution involved in coal burning.

And at the opening ceremony of the Beijing-based center on Saturday, Coal Industry Minister Wang Shenhao, wrote: "Developing clean coal engineering technology and making use of coal in a more efficient way makes for a cleaner environment."

The center's major tasks include developing coal engineering technology, providing technical training and consulting services and helping the State to draft policies for developing clean coal technology, said Zhu Deren, director of the center.

The research of clean coal technology is one of the major issues in environmental protection.

Such technology is of particular importance to China.

The country is the largest coal producer and consumer in the world. And its coal production accounts for one-quarter of the world's total. Coal will continue to be China's major energy source for the next several decades.

The technology for the coal industry will be one of the important factors deciding whether the national economy can develop in a healthy way, Zhu said.

The efficiency of coal is low in China. Less than 30 percent of the country's coal is used for generating electricity while the rest is burnt directly. More than 81 percent of the coal consumed in China is raw coal which is not washed. Such coal causes serious pollution.

"The development of coal engineering technology and the widespread use of such technology is urgent," said Zhu.

REGIONAL AFFAIRS

Participants in South Pacific Forum 'Vow' To Stop Overexploitation of Resources

BK0308030494 Melbourne Radio Australia in English
0100 GMT 3 Aug 94

[Text] Asian countries face new restrictions in negotiating access to South Pacific forests and fisheries. Alexandra Kirk reports the South Pacific Forum has vowed to stop the overexploitation and destruction of the region's natural resources: [begin recording]

Kirk: Fifteen Pacific Islands leaders meeting in Brisbane ended their two-day summit, agreeing to bring in a code of practise to slow logging of their tropical rain forests and vowing to charge more for access to their abundant tuna fisheries.

In a first for the region, Australia has offered to forgive some of the Solomon Islands debt in exchange for an end to logging in a proposed world heritage area.

Pacific nations also proposed to boost economic growth by developing the private sector and rationalizing unprofitable airlines. For the rest of the week, big aid donors to the region, including Asian nations whose companies have exploited the resources, are holding a series of bilateral aid and trade talks with South Pacific leaders. [end recording]

Pacific Island Nations Seek Aid From Australia To Halt Rain Forest Destruction

BK0108084494 Melbourne Radio Australia in English
0100 GMT 1 Aug 94

[Text] Pacific island nations say they need financial assistance from Australia if they are to stop mass destruction of their tropical rain forests. Alexandra Kirk reports island leaders meeting at the 25th South Pacific Forum in Brisbane agree with Australia's call for better forest management, but say they cannot do it on their own: [begin recording]

Kirk: Forum host Prime Minister Paul Keating said urgent actions are needed to stop unsustainable logging, to boost return for the use of fisheries, and better manage natural resources. There is general agreement on the need for change. The Solomon Islands say they have the will and desire to do something positive but that is not enough, calling for urgent financial assistance, and Papua New Guinea's [PNG] prime minister, Paias Wingti, has welcomed the move to adopt the regional management plan to stop the exploitation of Melanesian forests.

Wingti: PNG would consider participating, but at the same time we must be compensated meaningfully for foregoing certain foreign exchange and income for the country. [end recording]

South Pacific Forum Leaders Agree To 'Take Action' To Protect Forests, Fisheries

LD0108121794 Melbourne Radio Australia in English
1100 GMT 1 Aug 94

[Text] South Pacific Forum leaders, meeting in Brisbane, have agreed to take action to protect the region's fisheries and forests. Alexandra Kirk reports that one of the first outcomes of the meeting of the 15 island nations is a deal to combat what has been described as environmental piracy in the Solomon Islands. [begin recording]

Kirk: The forum strongly criticized exploitation of tropical forests. In a special [words indistinct] the Solomon Islands has suspended the licence of a foreign company for allegedly logging illegally. Australia will provide two million [Australian] dollars in a structural adjustment program if the island's government bans logging around the Marovo lagoon, including an environmental study to encourage sensitive tourism industry. The forum agreed to develop a multilateral negotiating regime for access to the Pacific's fisheries to increase returns to the island nations, and the leaders have agreed to look at rationalizing the region's air services in a bid to stem airline losses. [end recording]

Tuvalu Premier Blasts Australia Over Failure To Reduce 'Greenhouse' Gasses

BK0208064994 Melbourne Radio Australia in English
0500 GMT 2 Aug 94

[Text] The tiny Pacific island of Tuvalu has joined environmental groups in criticizing Australia for not doing enough to reduce greenhouse gas emissions. As Alexandra Kirk reports, Tuvalu has told the South Pacific Forum in Brisbane that global warming is becoming a nightmare for island people: [begin recording]

Kirk: Tuvalu, which is just 2 meters above sea level, is considered the Pacific's most vulnerable island to rising sea level. Prime Minister Kamuta Latasi says for the first time ever his island is being battered by tidal wave, and he warns that unless Australia does more to cut greenhouse gas emissions there will come a time when Tuvalu may have to move to Australia.

Kamuta: You see what is going to happen to the population in this low-lying islands? Would they be able to accept us in one of the parts of Australia for us to settle there or what? We have to work from now, not to wait until that happened. [end recording]

Singaporean Foreign Minister Says Linkage 'Unacceptable'

BK2907010694 Singapore THE STRAITS TIMES
in English 28 Jul 94 p 13

[Excerpt] SINGAPORE'S Foreign Minister, Prof S. Jayakumar, yesterday said efforts by Western countries to

link workers' rights and environmental issues to trade was unacceptable because it constituted a form of protectionism.

He said some of the issues which the West had been complaining about on wages and working conditions were "the elements which give competitive edge to developing countries".

He was responding to a question at a press conference of ASEAN foreign ministers and their dialogue partners at the end of the annual ASEAN meetings in Bangkok.

He said he hoped the United States and other Western countries would understand better ASEAN's position after this past week's meetings, during which ASEAN and its dialogue partners discussed the issues.

ASEAN foreign ministers, in their joint communique on Saturday, expressed serious concern that the linkage of worker rights, labour standards and environmental issues to trade could become a new pretext for protectionism.

They said the linkage could undermine the progress achieved so far in the liberalisation of world trade.

Labour issues, they added, should be discussed by such bodies as the International Labour Organisation (ILO). [passage omitted]

Australian Prime Minister Urges Island Leaders To End Misuse of Resources

BK3107133294 Melbourne Radio Australia in English 0800 GMT 31 Jul 94

[Text] Australia's prime minister, Paul Keating, has called on South Pacific nations to stop the unsustainable exploitation of their forests and marine resources. Alexandra Kirk reports that the call was made shortly before Mr. Keating officially opened the 25th South Pacific Forum meeting in Brisbane. [begin recording]

Kirk: Mr. Keating says the forum is one of the last chances the South Pacific will have to address unsustainable logging of tropical forests and exploitation of tuna fisheries. The prime minister, who is hosting the forum, says Australia has had to make some hard adjustments and a similar task now lies ahead for island nations. While some Pacific leaders say that adjustment requires extra financial assistance from Australia, Mr. Keating appears reluctant.

Keating: No, I don't think we are asking countries much than to keep an eye on the sustainability of their own resources; I mean, to not make that point is to say we'll let resources get to the point where they are unsustainable and then where do they go then? [end recording]

In a television interview earlier today, Australia's minister for Pacific Island Affairs, Gordon Bilney, also called on island governments to stop the exploitation of their natural resources and warned that Australia might

switch its aid priorities. As an example of poor management, Mr. Bilney said the world market price for logs was \$350 [Australian dollars] a cubic meter, but one island contract was worth less than \$3 a cubic meter. Mr. Bilney also said there'd been too little united action against foreign fishing companies whose activities were now threatening the long-term ocean resources of the South Pacific. Mr. Bilney added that now he was reluctant to make aid conditional on good management policies, Australia might shift its aid priorities to Pacific states which emphasized employment issues, and population control.

Keating 'Very Concerned' Over 'Unsustainable Logging' in South Pacific

BK2807151294 Melbourne Radio Australia in English 0500 GMT 28 Jul 94

[Text] Australia says it wants the South Pacific Forum meeting in Brisbane to set the stage for the next 25 years of the forum. A senior Australian official in Canberra said that because Brisbane would be the 25th forum meeting, it was a proper time to set future directions.

He said Australia's Prime Minister Paul Keating wanted to give control of the forum back to the leaders. The official said that spending a whole day at the forum leaders retreat meant the emphasis would be on discussions at the top and not on statements precooked by officials.

The official added that Mr. Keating was very concerned at the unsustainable logging taking place in Papua New Guinea, Vanuatu, and the Solomon Islands. He said Australia's prime minister believed decisions had to be taken now or tropical forests, which could sustain tourism, would be lost forever.

The forum, involving 15 South Pacific states, will open in Brisbane on Sunday.

Malaysian Minister Says 'Jealousy' Behind Australia's Logging Allegation

BK0408061394 Kuala Lumpur BERNAMA in English 0325 GMT 4 Aug 94

[Text] Kuala Lumpur, Aug 4 (OANA-BERNAMA)—Jealousy was the reason behind Australia's allegations that Malaysian, Indonesian and Korean logging companies were exploiting the Solomon Islands, Malaysian Primary Industries Minister Lim Keng Yaik said Wednesday night.

Speaking at the Malaysian Panel-Products Manufacturers Association's (MPMA) 30th annual dinner here, he said Australia which previously dominated logging in the Melanesian countries of Papua New Guinea, Solomon Islands and Vanuatu lost out to others as they were unable to keep up with current demands which required logging methods to be environmentally friendly.

Tuesday, the AUSTRALIAN POST had reported that Australian Prime Minister Paul Keating had accused Malaysian, Korean and Indonesian logging companies in the Pacific Islands of paying inadequate rates of return and damaging the environment with their logging methods.

ASEAN Rejection of Workers' Rights, Trade, Environmental Linkage Viewed

BK0308070494 Jakarta THE JAKARTA POST in English 26 Jul 94 p 4

[Editorial: "Trade and Right"]

[Text] The Association of Southeast Asian Nations member countries have formally rejected the inclusion of workers' rights, labor standards and environmental issues in international trade agreements. A joint statement issued at the end of the ASEAN Foreign Ministerial Meeting in Bangkok last weekend cited among the reasons for the refusal the possibility of market access restrictions and their impact on employment opportunities in developing countries.

The ASEAN members believe that the developed countries' move to link human rights and environmental issues with international trade agreements is a mere pretext for protectionism.

As has been known for some time, many Asian governments have grown more and more irritated in the last several years by what they see as the high-handed habit of forcing values and standards on Asian countries on the part of a number of developed nations.

Initially those Asian countries, which badly need market access and capital from the West, tended to bow under the pressure. Later, however, they became convinced that what they initially perceived as being a genuine concern over human rights and the environment was turning out to be a smokescreen to hide a plot to stamp out the growing threat of Asia's newly industrialized countries.

For one thing, while acknowledging that there is, indeed, a real concern among many Western communities and non-governmental organizations over human rights and environmental issues, these Asian countries believe that some Western countries are adopting a double standard in imposing their values.

The United States' failure to cut China's most favored nation trade status last June, after President Clinton was forced to bow to U.S. business pressure, has further convinced Asian countries that the United States' main concern is its national interests. This has encouraged other Asian countries to take a more hard-line stance on human rights and environmental issues.

One can expect that following ASEAN's hardened stance, confrontation will be the menu of the day in the weeks to come. Although we do not think that a full-scale

trade war will start in the near future, one can expect that lengthy bickering may occur.

A trade war aside, our concern is the possible impact on our human rights movement of the newly decided ASEAN common stance on the human rights issue. It is no secret that in the past some of our human rights activists relied rather heavily on international pressure in the belief that such nudging would move the government to improve our human rights condition.

Such a notion may have been correct a few years ago, but of late we have seen that the government has tended to ignore such nudging, perhaps because of a growing confidence that the so-called "international pressure" is nothing but the roar of a paper tiger. For example, a few months ago nobody would have believed that with the APEC [Asia-Pacific Economic Cooperation] Summit due to be held here in November the government would dare to clamp down on the press.

Moreover, such an international linkage has its drawbacks: It has caused the authorities to question the validity and "honesty" of the human rights movement here, and to suspect that it could be a vehicle for undermining national stability.

However, one should not forget that in the last several years there have been many improvements in the human rights condition here. Thus we believe that a real political will exists in the government to improve the human rights condition in Indonesia.

What we hope to see most, given the apparent prevailing symmetry in principle, is our commonly shared ideal of a just society achieved without unnecessary delay or shocks.

INDONESIA

River Contamination Reaches 'Disturbing Level'

BK2707133994 Jakarta ANTARA in English 1054 GMT 27 Jul 94

[Text] Banjarmasin, S. Kalimantan, July 27 (ANEX-ANTARA)—Fifteen years of observation has indicated that many rivers in Indonesia have undergone quality deterioration, State Minister for Environmental Affairs Sarwono Kusumaatmaja said here Wednesday.

Before a number of officials and industrialists during the signing of a statement on a government-sponsored clean river programme [words indistinct], Kusumaatmaja, who is also head of the Agency for the Control of Environmental Impact (Bapedal), said most river water has been found to be below the quality standard.

More and more complaints have been filed because the deteriorating quality of river water has reached a disturbing level, he said.

The minister also said that the latest developments have shown that some industrial undertakings have been

embroiled in conflicts because industries located downstream have to use water already contaminated by the waste disposal from those upstream.

Similar conflicts have also been found in agricultural and settlement areas, he added.

Therefore, he said, the government has for five years now been carrying out a national programme to control water contamination, known as a clean river program (prokasihi), in 20 rivers spread in 8 provinces.

Prokasihi is aimed at improving the quality of river water by means of reducing the load of pollutants entering the river and is implemented under the principles of simple focus and law compliance and enforcement, he added.

Regarding river contamination, he pointed out that besides industrial waste, waste from hotels, hospitals, trade centres, and real estates has also been found to be responsible for the deteriorating quality of river water.

In the current sixth five-year development period (1994-99), law enforcement with regard to prokasihi will be implemented more firmly and more consistently, he added.

JAPAN

Government Signs International Treaty for Conserving Bering Sea Pollack

OW0508004994 Tokyo KYODO in English 2303 GMT 4 Aug 94

[Text] Tokyo, Aug. 5 KYODO—The Japanese Government Friday [5 August] signed an international treaty for conservation of Alaska pollack resources in the central Bering Sea, officials said.

It is now up to the Diet to ratify the treaty, which was signed in Washington.

When the treaty takes effect, Japan will meet annually with five other nations to fix national catch quotas for the fish, whose numbers in the open sea have been decreasing, the officials said.

Along with Japan, China, South Korea, Poland, Russia and the United States agreed on the treaty in February. Only Poland has yet to sign.

The treaty obligates signatory nations to assess the pollack resources in the sea in order to fix national catch quotas and also requires them to crack down on sea-faring poachers.

Environment Agency Plans Organization of 'Experts' To Help Developing Countries

OW0308085194 Tokyo KYODO in English 0827 GMT 3 Aug 94

[Text] Tokyo, Aug. 3 KYODO—The Environment Agency is considering setting up an organization to

ensure dispatches of environmental experts to developing countries, agency officials said Wednesday [3 Aug].

Although Japan sends 80 such experts—mainly central and local government officials—every year to developing countries, the country is not meeting all the requests from such countries because of difficulty in securing experts, the officials said.

The officials said the organization, named tentatively as the International Environmental Support Center, will employ some 100 experts, mainly retired government officials aged between 45 and 65, who have experience in measuring levels of air and water pollution, and in other environmental fields.

The experts will be sent to developing nations via the governmental Japan International Cooperation Agency (JICA) and while in Japan, they will teach their expertise to government officials and trainees from foreign countries, they said.

Accord To Improve Law on Exploitation of Deep Seabed Resources Signed

OW3007003594 Tokyo KYODO in English 2328 GMT 29 Jul 94

[Text] Tokyo, July 30 KYODO—Japan signed a working agreement Friday [29 July] evening in New York (early Saturday Japan time) to improve stipulations of the law of the sea convention on the exploitation of deep seabed resources on the high seas, government officials said.

Shunji Maruyama, Japanese ambassador to the United Nations, attached the signature at UN headquarters to the agreement adopted by the UN General Assembly.

The United States and Britain have yet to sign the convention, adopted in 1982, because they are dissatisfied with the exploitation provisions. Japan signed the convention but has yet to ratify it for the same reason.

The resources development provisions were considered disadvantageous by the industrialized countries. They contend that the operations of private mining consortiums might be unacceptably limited by the stipulations that their technology should be shared with the international sea-bed authority to be set up under the convention. The new working agreement, however, does not obligate such consortiums to share their exploitation technology with the authority.

Japanese foreign ministry officials described the accord's contents as acceptable. The Japanese Government is expected to start studies on the possible revision of the Japanese laws concerned in preparation for the ratification of the convention.

Draft Government Report Says Country Unable To Meet Carbon Dioxide Target

OW0108102894 Tokyo KYODO in English 0920 GMT 1 Aug 94

[Text] Tokyo, Aug. 1 KYODO—A draft government report released Monday [1 Aug] said Japan cannot

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

stabilize its emissions of the global warming gas carbon dioxide by the deadline of 2000 as stipulated in an international convention which came into effect in March.

The report, for presentation to the secretariat for the framework convention on climate change, said Japan's carbon dioxide emissions will exceed 1990 levels by about 3 percent in 2000.

The draft says if this happens, Japan would not be able to attain targets set in the convention's action plan to stop global warming.

After inviting public comment until Aug. 12, the document will receive formal assent from the cabinet at the end of the month and then be forwarded to the Geneva-based convention secretariat.

Based on a long-term energy supply and demand forecast drawn up in June by the Agency of Natural Resources and Energy, the draft said carbon dioxide emissions will amount to some 330 million tons annually by 2000. This is 10 million tons more than in 1990.

As a result, the report concluded that "added effort is required" if Japan is to achieve its target of stabilizing emissions at the 1990 level.

The report also said emissions of nitrous oxide will increase from 48,000 tons in 1990 to 52,000 tons in 2000.

It said methane emissions will be within targeted levels, decreasing from 1.38 million tons to 1.15 million tons.

One of the convention aims is to stabilize global densities of gases thought to contribute to the "greenhouse effect" that causes global warming.

The treaty came into effect in March and as part of their commitment to its ratification, Japan and other developed countries must submit reports on their efforts to comply with its terms to the convention secretariat by Sept. 21.

SOUTH KOREA

Country Secures Rights To Develop Part of Pacific Ocean Seabed

SK0408020594 Seoul THE KOREA TIMES in English
4 Aug 94 p 1

[Article by staff reporter Choe Won-sok]

[Text] Korea has secured the right to develop natural resources on the sea-bed in the open sea in the Pacific Ocean off Hawaii.

The United Nations yesterday named Korea a "pioneer investor" with the sole right to develop mining products

in an area covering 150,000 square km in the Clarion-Clipperton [name as published] (C-C) sea bloc, 2,000 km southeast of Hawaii, the Ministry of Trade, Industry and Energy announced.

Korea was awarded the right to mine natural resources in the area in accordance with the U.N. Convention on the Law of the Sea which stipulates the joint development of mining products in the seas as the "common heritage of mankind."

The Clarion-Clipperton [spelling as published] bloc is rich with manganese nodules which contain manganese, nickel, copper and cobalt.

According to the ministry, the area to be developed by Korea is embedded with 930 million tons of such mining products.

Korea is the eighth country to have officially secured the right to develop sea mining products from the United Nations. The seven other developers are France, Russia, Japan, India, China, Germany and the United Kingdom.

But nine more countries including the United States are taking part in the development of natural resources in the open sea with the acquiescence of the United Nations, but without securing its formal permission.

Korea has yet to donate \$250,000 to the United States [as published] in return for the right to mine natural resources in the open sea, the ministry said.

Of the total 150,000 square km, Korea will freely choose a 750,000 square km spot in the area as its mining bloc for development after exploration over the next eight years and will return the remaining half to the United Nations according to Convention on the Law of the Sea, ministry officials said.

They predicted that the development of mining products in the bloc would be commercialized sometime after the year 2010 and would possibly be able to turn out 3 million tons per annum for the following 12 years.

Manganese, nickel, cobalt and copper to be developed will be enough to meet Korea's annual demand. Korea is entirely dependent on imports of them which annually cost \$1 billion on average.

The Korean Government submitted officially its application to the United Nations in January this year.

Manganese is used in steel, fertilizers, batteries, nickel in aircraft parts, gas turbines, automobiles and cobalt in jet engines and permanent magnets.

Daewoo Introduces Low-Emission, High-Performance Vehicle

SK2807080994 Seoul YONHAP in English 0654 GMT
28 Jul 94

[Text] Seoul, July 28 (YONHAP)—Daewoo Motor Co. announced the development of a natural gas vehicle

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

[NGV] which meets the world's strictest standards for exhaust emissions while offering a solid driving performance and economic viability.

The "Daewoo NGV II" was developed as one of the government's G-7 projects with an investment of 2.1 billion won over one year and seven months, according to a Daewoo spokesman. The company developed the "Daewoo NGV I" in December 1991.

The Daewoo NGV II, modeled after the 1,600-cc [cubic centimeter] Espero, runs solely on natural gas while the Daewoo NGV I, patterned after the 2,000-cc prince, is powered by liquefied petroleum gas as well as compressed natural gas, the spokesman said.

The new model boasts improved engine capability and reduced exhaust emissions due to its multi-point gas injector system, while the old model uses both the mixer and the injection systems, he said.

The Daewoo NGV II, developed solely with Daewoo technology, can cover 400 km at a maximum speed of 170 km per hour on a one-time charge. The new model could be put on the market anytime because its driving performance and other capabilities match gasoline-powered cars.

Furthermore, the new natural gas vehicle costs only about 1 million won more than the ordinary gasoline model and the price of natural gas is only about one-third that of gasoline, enhancing its economic viability. The price of an electric car, meanwhile, is three times that of a gasoline-powered auto.

The new model also satisfies the requirements of the "ultra-low emission vehicle," the world's strictest car exhaust emission standards, of California, the United States.

The new model can reduce total emissions by more than half with 89 percent fewer hydrocarbons, 31 percent less carbon monoxide and 16 percent less nitrogen than gasoline vehicles, according to the spokesman.

Daewoo plans to start marketing the natural gas vehicles in 1997 when the nation's gas distribution network is completed, said the spokesman, who added that the company will also make inroads into the American market around that time.

The company is considering exporting the Daewoo NGV IIs to Canada, Russia, Argentina and Australia, where natural gas vehicles are already operated, in 1995 when it expects the new natural gas model to obtain quality approval and pass durability tests.

MALAYSIA

Joint Wildlife Sanctuary Planned With Indonesia

BK2907053194 Kuala Lumpur BERNAMA in English
0700 GMT 28 Jul 94

[Text] Bintulu, July 28 (OANA-BERNAMA)—The world's biggest wildlife sanctuary covering some one

million hectares of land in Sarawak and West Kalimantan in Borneo will be set up by Malaysia and Indonesia next year.

Sarawak Assistant Minister in the Chief Minister's Department Awang Tengah Ali Hassan said Thursday the park would cover over 173,000 hectares of the Lanjak Entimau wildlife sanctuary in Sri Aman and Kapit divisions in Sarawak and another 800,000 hectares in PT [Company Limited] Karimun, Indonesia. [sentence as received]

The Malaysian side of the sanctuary would be located near the Batang Air hydro-electric project site with West Kalimantan as its border, he told reporters after opening the 10th conference of the Sarawak/West Kalimantan Malindo socio-economic working group/working committee, here.

Steps were being taken in preparation for the project to be run jointly with the International Tropical Timber Organisation (ITTO).

He said the project would be implemented in early or middle of next year.

Awang Tengah said the Indonesian Government had agreed to set up a similar wildlife sanctuary to be named PT Karimun next to Lanjak Entimau's border and when launched the whole area would be the world's largest wildlife sanctuary.

H. Padi Natasuwarna, who led the West Kalimantan delegates to the conference, told BERNAMA that the Indonesian authorities would implement the project simultaneously with their Malaysian counterparts by allotting some 800,000 hectares for the project.

He said the proposal would be submitted to the Indonesian Government for approval.

THAILAND

National Environment Board Urges Ratification of Biological Diversity Treaty

BK0108104094 Bangkok BANGKOK POST in English
1 Aug 94 p 10

[Text] The National Environment Board will push for ratification of the Treaty on Biological Diversity, although academics and lawyers are unsure whether Thailand will lose or gain from the move.

The treaty was signed by 167 countries including Thailand during the Earth Summit in Rio de Janeiro, Brazil, in June 1992 and came into force at the end of last year.

More than 50 countries have ratified the convention but Thailand is still unsure about the document.

The National Environment Board, chaired by the prime minister on March 30, agreed Thailand should ratify the treaty and would submit the meeting's result to the Cabinet for final approval "soon."

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

However, Chareon Khamphiraphap of the Environment Law Centre said, after studying the treaty, that he considered the aim of the convention was to use rather than preserve natural resources.

In the past, the state's sovereignty was the major barrier to outsiders who wanted to use another country's resources.

The treaty, according to Mr Chareon, is aimed at getting rid of this obstacle, opening the door for developed countries to benefit from others' resources without any guilt.

The treaty's ratification would increase Thailand's dependence on others' advanced biotechnology and reduce its sovereignty, he said.

Developing countries were lured by offers of financial help to commit themselves to the convention without clearly understanding where the money would come from, he said.

Technology transfers, one of the subsidiary services mentioned in the treaty, were influenced by patents and other intellectual property rights and would be difficult to implement, he said.

He said people authorised to consider the issue must be knowledgeable in biological diversity and legal aspects to ensure the country's interests were protected.

"Don't think that national natural resources belong to any particular ministry. Stop risking the country's faith by ratifying the convention when a clear perception has yet to be reached," he said.

Suphawit Piamphongsan of the Environment Policy and Planning Office voiced a contrasting view, saying the country would lose benefits if ratification was postponed.

He said the treaty could be considered the framework of biodiversity conservation. The convention also solved a funding shortage among developing countries which had abundant resources but did not have enough money to preserve them.

However, he accepts there are some loopholes in the treaty.

Articles 15 and 16, which focus on access to genetic resources and technology transfers, would face the intellectual property rights problems.

He said almost 70 per cent of the nation's genetic resources had been taken out of the country and it should not be over-concerned that other countries would benefit from its existing resources.

Dai-cha Siriphattra, director of technology for rural and ecological enrichment, said that Thailand, instead of underestimating itself, should realise that its biodiversity is richer than in many countries such as the United States and Australia.

"We always wait for donations from other countries without the knowledge that we have the most valuable resources in our land," he said.

He said the rights of farmers were not mentioned in the convention even though they were most-affected.

The Huai-Kha-Khaeng biodiversity research fund provided by the World Bank and the Global Environmental Facility was mostly spent on evacuating local people from the areas, according to Mr Dai-cha.

He said local people who had access to the resources for centuries, should not be left out of society.

"We should not abide only by the beautiful words of the treaty but must look deeply into the real core of society. The public should have more say on the issue since it concerns the national interest," he said.

Editorial Claims New Regulation To Hurt Environment

BK2807065394 Bangkok BANGKOK POST in English
28 Jul 94 p 4

[Editorial: "Rule Change Weakens Care of Environment"]

[Text] Virtually without any fanfare and with little public notice, an important piece of legislation regarding land rights which will have wide-ranging implication was promulgated in April. The law, Ministerial Regulation No 43, has taken the place of several other regulations earlier promulgated, including Ministerial Regulation No 5 which was enacted in December 1954, the same year that the Land Code came into force.

Although promulgated four decades ago, Ministerial Regulation No 5 is still regarded as a good law because of the farsightedness and concern for the environment displayed by the legislators. The outstanding element of the regulation is that it bans the issuance of land title deeds for land on hills, mountains, prohibited areas or land reserved by governmental agencies for its natural resources.

Sadly, this important legal feature was omitted in recently-enacted Ministerial Regulation No 43 and replaced by ambiguous phrases which open a huge legal loophole for exploitation. Essentially, once the jargon is removed, the new regulation says that issuance of land title deeds for land on hills, mountains and prohibited areas is not permissible unless a person had rights over the land before the promulgation of the 1954 Land Code. The regulation also allows individuals to claim ownership and be given land title deeds for land on the islands if they have evidence proving their right to occupancy.

On the bright side, this regulation may provide a solution to the countless cases of land ownership disputes pending in courts or with the authorities. It may also give an answer to the claims of ancestral rights of land in forests by many villagers.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

But on the darker side, a close scrutiny of the regulation shows that this may turn out to be the opening of a floodgate for a new rush of forest encroachment, especially where there are mountains and streams which are ideal for "development" as golf courses, resorts or farms. With the collaboration of corrupt land officials. Illegal encroachment of land which took place before the enforcement of the regulation can also be legitimised.

This pessimistic view is not without foundation. Despite the existence of the law which prohibits the issuance of title deed for land on hills and mountain title deeds and other forms land rights documents have been issued by land officials for land which has been illegally encroached upon. This was made possible because of the power of money or the influence wielded by the encroachers. Land encroachment has been extensive especially in provinces with tourism potential. And in most cases, the illegal activities by the rural poor were encouraged or funded by rich urbanites who include businessmen, high-ranking government officials and local influential figures who are the real claimants to, or owners of, the encroached land.

Because of the devastating implications resulting from the loopholes, Ministerial Regulation No 43 appears to contradict national forestry policy which aims to protect and preserve forested mountains, many of which are watershed areas. Also in theory, mountains which have high slopes are vulnerable to soil erosion and, therefore, must not be occupied by individuals. Yet, the writers of this regulation have completely ignored this harsh fact and chosen to leave the door open for ownership claims.

It is, indeed, unthinkable how such a regulation can be allowed to be promulgated without thoughtful consideration of its negative implications on the country's many diverse environments which are now coming under increased human pressure. Especially if it can be unmistakably assumed that, in the end, the persons who will benefit from it are the rich and the powerful elitists. The landless locals will gain the least from the regulation.

As the jurists say, a deed is the indicator of the motive prompting it. And in this particular case, the motive of the Interior Ministry in making such controversial changes is open to serious question.

Experts Differ on Ratifying Biodiversity Convention

BK2707091394 Bangkok THE NATION in English
27 Jul 94 p A9

[By Walakkamon Iamwiwatkit]

[Text] Lawyers, government officials and non-governmental organizations engaged in a heated dispute at a seminar yesterday over whether to ratify the global Biodiversity Convention.

Critics in the private sector claimed the treaty was unclear and that figuring out who would benefit from it would depend on how it was interpreted. They predicted it would lead to several problems, including the loss of the country's sovereignty and the unequal consumption of bioresources in Thailand and other developing countries.

However, National Environment Board (NEB) representative Suphawit Paimphongsan fully supported ratification. He said that even though the convention contains many unclear passages, Thailand will benefit by ratifying the agreement and then bargaining over its interpretation.

The NEB already approved ratification of the convention at its meeting on March 30, 1994, stating that the more ratification is delayed the fewer advantages Thailand will receive. Thailand should try to find a way to participate in the negotiation process over the convention's details, which would give it a chance to gain more benefits, the NEB added.

NGOs and lawyers complained yesterday that the NEB decision-making process excluded the public which will be affected by the convention. The public was not informed about the convention and had not been allowed to offer any input.

The seminar—the first held to discuss the legal ramifications of ratifying the treaty—was organized by the Local Development Institute (LDI), the Thailand Environmental Law Centre (TELC) and Chulalongkorn University's Faculty of Law.

Charoen Khamphiraphap, a TELC lawyer, said the convention is an international treaty designed so that signatory countries could gain maximum profit from its bioresources. At the very least, this could lead to the overwhelming destruction of natural resources, he added.

He said that only two of the 42 articles in the convention refer to the conservation of bioresources. The others focus on how developed countries can use the bioresources of developing countries, which is unfair, he claimed.

Charoen added that ratifying the treaty would diminish the country's sovereignty. The convention would become a new international mechanism to control Thailand. The commitments laid out in the convention will make Thailand more dependent on developed countries.

CROATIA

Power Industry Head Views Krsko Power Plant

AU2507103594 Zagreb VECERNJI LIST
in Serbo-Croatian 19 Jul 94 p 7

[Interview with Vladimir Kramberger, assistant to the minister of Industry, Shipbuilding, and Energy and president of the Board of Management of the Croatian Electric Power Industry, HEP, by Zdravko Cesar; place and date not given: "The Slovenes Unduly Claim 70 Percent of the Nuclear Power Plant!"]

[Text] After several months of darkness in Dalmatia, the intervention program of the Croatian Government and the HEP [Croatian Electric Power Industry], the destruction of the dam at Peruca, and the talks with the representatives of Montenegro about electricity and water in the vicinity of Dubrovnik, the electric-power situation in Croatia has improved considerably. However, in the meantime, the public has started concerning itself with other events. The price of electricity has gone up, payments in German-mark equivalents have been introduced, the HEP trade union is on strike every now and then, the problem with the nuclear power plant at Krsko is again topical, and the representatives of major consumers like "Dalmacija" of Dugi Rat demand special prices. Moreover, far from the public eye, teams for the "Prohes" project, which was nominated by the government for the PHARE [Economic Reconstruction Aid for Poland and Hungary] program, are being organized. Our interview with Vladimir Kramberger, assistant to the minister of industry, shipbuilding, and energy and president of the Board of Management of the HEP, raises all those issues.

Cesar: Lately, the media have again started writing about the electric-power situation, mostly about problems related to the "Krsko" nuclear power plant, which the Slovenes allegedly intend to nationalize, so that Croatia would be left with as little as 29.33 percent.

Kramberger: On 25 January this year, Prime Ministers [Nikica] Valentic [of Croatia] and [Janez] Drnovsek [of Slovenia] came to an understanding regarding the ways to pay off the Croatian debt to "Krsko," and agreed to discuss the legal and status organization of the "Krsko" nuclear power plant at the level of the ministries of economy. A task force set up to that end met with the leading ministers on several occasions. Today, after the talks in Opatija held on 4 July and after the meeting of the two prime ministers at Brdo near Kranj on 8 July, we can say we were only half-successful. It is now certain that, by 1 August, the task force will manage to reduce the pre-war debt of the HEP to a one-month bill.

Only Political Agreement

No accord was reached about the draft proposal of the intergovernmental agreement on the legal organization and status of the NEK [the "Krsko" Nuclear Power

Plant]. Minister Vidosevic concluded the meeting in Opatija convinced that there was no professional agreement and that a political agreement is necessary. Property relations are the most controversial issues. Until the Slovenes told us their viewpoints on 18 March this year, we were convinced that at least the question of property relations had been resolved and firmly set at a 50:50 ratio. However, the Slovenes think that our share in the NEK is only 29.33 percent. Their explanation was completely unacceptable and we could not discuss the issue any longer. We still claim that the previously agreed ratio of joint ownership can only be changed by agreement, i.e. if one side wants to capitalize the NEK more than the other side. In that case, the other side should agree to change the contract to that effect. That is the only way to change property relations.

Cesar: Rumor has it that a third owner has appeared.

Kramberger: Yes, according to Slovene representatives in the task force. They think that, with the signing of the self-management agreement in 1982, in addition to two investors, Slovenia and Croatia, there appeared another: the workers of the NEK! At that time, the NEK was an Organization of Associated Labor [enterprise that operates within the framework of a socialist system based on the concept of social ownership and workers' self-management] and became a social enterprise later on. Those workers have, allegedly, from 1983 onwards, created additional social capital with their work. Now they say the social capital is a result of the amount of money allocated for depreciation, both on the Croat and on the Slovene side.

The Slovenes Stick to Associated Labor Act

Cesar: The Slovenes hold that it is a kind of "anonymous social capital" and that it must be nationalized.

Kramberger: According to the new Public Economic Services Act, the social capital that allegedly belongs to the workers of the NEK should become the property of the state, i.e. be nationalized. In their opinion, the Slovene state now actually owns 70.67 percent of the capital (for there is no owner on the Slovene side) and the HEP owns 29.33 percent. We cannot accept that view, for depreciation is a cost and has nothing to do with capital. Both the Slovene and the Croat sides had equal depreciation amounts, but the Croat side incorporated it on the level of the HEP with the aim of constructing a new plant.

Cesar: Different balance sheets have also come into play. Some confirm such calculations, while others deny them.

Kramberger: Slovene negotiators insist on the Associated Labor Act, although the notion of social capital is no longer recognized in Slovenia. Therefore, it is no coincidence that they base their thesis on the balance sheet of 31 December, 1992. However, according to the balance sheet and income statement of the NEK of 31 December, 1993, which was made according to the new Slovene

accounting system, which is compatible with the international system, the ownership ratio is quite different. It was established that the total capital of the NEK is 33.96 billion Slovene tolar. The share of the HEP is 18.01 billion Slovene tolar or 53.04 percent, and the capital of Slovenia 15.95 billion Slovene tolar or 46.96 percent.

As a result of that, the task force made up of prominent experts could not continue its work. Furthermore, regardless of the agreement and accord with the Croat co-owner, the Slovenes have initiated proceedings to pass a bill on decommission in the Slovene parliament. Slovene negotiators want to impose their terms. We hold that Croatia has a clear duty to participate in the decommission, i.e. in taking care of radioactive waste, but we must reach an agreement on that. A referendum on the early shutdown of the NEK is still topical in Slovenia. Until we get the decision of the Slovene parliament on the destiny of the NEK, the replacement of steam generators, and other controversial issues, we cannot discuss its future. For example, we will not make any payments to the Decommission Fund with the Slovene side being able to shut down the nuclear power plant whenever they please.

Ten Years to Close Down the NEK

Cesar: But the Slovenes should give something to counterbalance that move.

Kramberger: According to our studies on an early shutdown of the NEK, the HEP should demand \$1.25 million, and the Slovenes figure that an early shutdown of the NEK would cost them \$2.1 billion.

Cesar: However, this is not just about money, but also about time and energy, which are important for both countries.

Kramberger: Of course. Mr. Sovic, Slovene state secretary for the power industry, has recently talked about the time needed to shut the plant down, and he said it would take 10 years to implement that decision. Considering the fact that the lifetime of the nuclear power plant is 40 years, i.e. until the year 2023—and some improvements could prolong its lifetime to 60 years—how long it will continue to operate is a matter of considerable significance. We are required to give all kinds of guarantees and the other side reserves the right to rule out every agreement we made by a single decision of its parliament.

Cesar: One of the theses in the Slovene press is that the Croat side has for years been paying a lower price for electricity coming from "Krsko." Is that true?

Kramberger: The difference is in creating the price: the Croat side is not buying electricity from "Krsko," while the ELES [Slovene Electric Power Industry] is, since it does not own the Slovene part of the power plant. Therefore, the HEP is a co-owner with 50 percent, while the ELES is not. The difference is in the gross price that both sides pay. The price the ELES pays is composed of

interest on foreign loans and del credere commissions, while the HEP is not paying to "Krsko," but settles all those costs directly. We pay a price of 3.15 cents per Kilowatt, and the Slovenes pay about 3.80 cents. The difference is in the fact that, on the Slovene side, it is the buyer that pays that price, while in Croatia, it is paid by the owner.

Cesar: "Dalmacija" of Dugi Rat has recently sent a letter to the Croatian Government demanding that the price of electricity be halved. Is it a specific case or are major consumers increasing the pressure to get bonus prices again?

Kramberger: Among other things, "Dalmacija" proposes that, from 1 January, 1994, the invoiced cost of electricity be at least cut in half. It has been having difficulties for a long time, and that is not its fault, rather it is a result of a large share of the price of electricity in the production unit. I participated in drafting the agreement on delivering electricity, made by the HEP and "Dalmacija" of Dugi Rat. According to that agreement, the HEP is selling surplus hydroelectric power to "Dalmacija" at a price that only covers the variable costs of production and distribution. I must point out that the agreement also regulates the period in which "Dalmacija" would be disconnected from the electric power system. Apart from that, the HEP cannot give any discounts, for that would create losses.

Electricity Cannot Be Any Cheaper

Cesar: How, then, do you intend to solve the problem of large consumers of electric power, and there are quite a few of them in Dalmatia, where electric power is scarce anyway?

Kramberger: During my recent visit to Dalmatia, we reached an agreement with large consumers about creating a task force that will draft the proposal for the solution of their electric power supply. We, in Zagreb, may not and cannot decide about their destiny.

However, I must say that there are very disturbing signs about the situation with electric power in all of Croatia since 15 June. In the northern part of Croatia, 89 percent of the planned electric energy consumption was realized, and in Dalmatia, including the island of Pag, about 79 percent. Here is further proof to the effect that things are not difficult just for Dalmatia: Our data show that the decrease in consumption of electric energy by large consumers in Dalmatia is 40.7 percent and 42.5 percent in other parts of Croatia.

Cesar: Considering the circumstances, is electricity expensive or cheap in Croatia?

Kramberger: The price of electric energy in industry averaged about 7.98 cents last year, and 7.3 cents per Kilowatt in households. Let us compare these figures with those in other countries: electric energy for households is most expensive in Belgium—17.13 cents, and cheapest in Sweden—7.41 cents per Kilowatt. Electric

power for industry is most expensive in Germany—11.29 cents, and cheapest in Sweden—5.18 cents. The price of a Kilowatt for industry is not higher than the price for households in any of the eight countries we compared. In Belgium, for instance, households pay an 80 percent higher price than industry, and in Israel the difference is only 20 percent. It is quite the opposite in Croatia; the unit price for households is approximately 10 percent lower than for industry. Such a ratio does not exist anywhere in the world! We reached the upper threshold with the price in industry. That happened at the time of war when all prices were reversed, for they were a kind of social welfare element. On 22 July last year, we tried to coordinate things to an extent, but we have not yet succeeded.

Cesar: Still, all consumers in Croatia also pay for the intervention program showing solidarity for Dalmatia, without which it would still be in darkness.

Kramberger: With approximately one cent on the price of a Kilowatt, all consumers show solidarity and finance the government intervention plan for Dalmatia, and distribution centers of the HEP show much solidarity for destroyed Dalmatia, and that amounts to tens of millions of German marks.

No More Shortages

Cesar: Can the price of electric energy nevertheless be lower?

Kramberger: We cannot cut the unit price of electric energy any more. However, the issue is not just the unit price of electricity. Consumers want to find a way to reduce their electricity bills. That can be done by influencing two pivotal elements—in production and in consumption. By rebuilding the HEP's plants, we would reduce the cost of production and thus also the production price, even up to 60 percent. We will, therefore, replace the old thermal power plants with gas thermal power plants with combined cycles or cogeneration. That should be completed by the end of the century.

Our other option is to rationalize consumption. There is a project called demand-side management. We will soon start a campaign for the mass-installation of power limiters in households. At approximately 1.5 million consumers, with the installation of power limiter alone, the HEP would save on the construction of 450 Megawatts of new production capacity.

Cesar: Will those power limiters be distributed to consumers free of charge?

Kramberger: The price of one power limiter is about 70 German marks, and we will try to offer solutions which will be financially constructive for every consumer.

Cesar: And finally, the "Prohes" project is under way. What is it about?

Kramberger: That is a project of the Croatian Government which has also been nominated for the PHARE

program, as it would provide a real strategy for power-supply development for the next 50 years. It includes all interested institutions and firms from the sector of the power industry, which are supposed to partly finance the project. Already, in two years, we should have formed the basis for future development in order to avoid reaching the situation we were in before.

[box 1, p 7]

Closing the Electrical Circuit

Cesar: Croatia should finally close the electrical circuit and connect its hinterland with the south. The "island connection" is just about to be completed.

Kramberger: It is almost completed and on 26 July, President [Franjo] Tudjman is supposed to reconnect the two parts of the electric power system, which were forcefully separated by the Serbian aggression in 1991, into one whole. The project is a part of the long-term development strategy for the islands of Krk, Pag, and Rab, and for the town of Zadar and its vicinity. For the "island connection," \$42 million were allocated and we have already spent almost \$36 million. We completed the project by the set deadline and we expect not to exceed the planned amounts by the end of stage one and stage two. The so-called stage zero of the "island connection" is the last of 14 projects of the intervention program for Dalmatia.

[box 2, p 7]

Strikes

Cesar: HEP workers have lately been on strike demanding higher salaries. What is the problem?

Kramberger: The Board of Management of the HEP has discussed salaries and the possibility of limiting the right to strike of certain work places during its 18th session. Trade unions claim that the balance between average salaries in economy and in the HEP has been disrupted, and the workers of the HEP have almost 24 percent higher net salaries than the average salaries in industry and shipbuilding. Lacking new criteria, that ratio has been condoned, by the government as well. The HEP Board of Managers supports the demands of HEP workers, for the established relations between public enterprises will not be disrupted if their demands are fulfilled, nor will the government stabilization program be jeopardized.

However, now we have two different sets of data about salaries. According to one, presented by the HEP management and three HEP trade unions, the ratio has been disrupted, and according to the other, which we received from the Payment Transactions Service, the ratio is still holding. We must look into the matter.

SLOVAKIA

'Scheme' for Ecological Projects Part of SPZ Election Program

AU2707154694 Bratislava SME in Slovak 25 Jul 94 p 2

["(asa)"-signed report: "The Party of Entrepreneurs and Tradesmen Will Go Into the Elections With the Democratic Party"]

[Text] Dolny Kubin—The Party of Entrepreneurs and Tradesmen [SPZ] Congress has decided on the party's candidates for the parliamentary elections. Party Chairman Vladimir Randa said in an interview with SME that they had agreed that they will go into the

elections with the Democratic Party; they still have to discuss the form of cooperation.

The party's leaders in Bratislava are Pavol Prokopovic and Jozef Gajdosik; in East Slovakia, Jan Vaskovic and Adolf Zajac; in Central Slovakia, Vladimir Randa and Kamil Duris; and in West Slovakia, Ivan Sykora and Karol Jenis. The SPZ wants to appeal to voters from among the ranks of entrepreneurs and tradesmen in particular, while concentrating on the problems that affect the private sector. A scheme for ecological projects—water plants, sewage systems, and sewage treatment plants in the individual regions—forms part of its election program.

REGIONAL AFFAIRS

Southern Cone Environmental Roundup for 18 July

PY2507223894

[Editorial Report] The following is a compilation of reports on environmental issues monitored through 18 July.

Argentina

The Argentine Naval Prefecture has neutralized the fuel oil that spilled from the Estrella Austral tanker into the River Plate, near Dock Sud. The spill could have contaminated the area. (Buenos Aires NOTICIAS ARGENTINAS in Spanish 1817 GMT 15 Jul 94)

Bolivia

On 1 July, guards from the Forestry Development Center in Trinidad found another shipment of saurian skins that were about to be smuggled to Santa Cruz. They seized 34 packages containing an average of 35 skins each, mostly alligator skins. This is the fourth successful operation so far this year. More than 3,500 saurian skins will be auctioned in the next few days. (La Paz PRESENCIA in Spanish 3 Jul 94 Second Section p 2)

Following a visit to Hernando Siles and Luis Calvo Provinces, authorities of the Chuquisaca Forestal Development Center reported that 400 hectares of forests are burned in this region each year. Peasant communities destroy the forests under the pretext of expanding their cultivation areas. They do not care about trees but about the corn they sow for their families and animals. (La Paz PRESENCIA in Spanish 5 Jul 94 Second Section p 3)

The Bolivian Government Oil Deposits enterprise has set in motion a pilot project to control diesel-engined vehicles, seeking to prevent a major environmental pollution in La Paz. The control will be carried out in different places of the city to determine the percentage of vehicles that contaminate the air. (La Paz LA RAZON in Spanish 18 Jul 94 p A8)

Brazil

The State Secretariat for the Environment has reported that 267 hectares of native forest and 56.74 hectares of tree nurseries were affected by 125 fires in Sao Paulo State in June. This is 12.6 percent more than in the same month last year. (Sao Paulo GAZETA MERCANTIL in Spanish 11 Jul 94 p 13)

Peru

The Ecological Police have reported that they will carry out surprise operations along the coastal zone to prevent pollution. They will thus protect the fauna and flora, and verify if industrial plants are complying with the environmental protection regulations. (Lima EL COMERCIO in Spanish 4 Jul 94 p A13)

Surco District city hall has fined the Lima Electric Power Enterprise \$2,000 and ordered it to plant 10 trees for each of the 40 plants it illegally cut down. This is the first time a city hall has sanctioned a state-owned enterprise for "ecological damage." (Madrid EFE in Spanish 1815 GMT 18 Jul 94)

Uruguay

A train transporting oil became derailed in the city of San Ramon. Prompt action by personnel from the State Railways Administration, AFE, and the National Administration of Fuels, Alcohol, and Portland Cement prevented some 60,000 liters of diesel oil from reaching the Santa Lucia River, some 1,000 meters from the scene. AFE Director Ivan Coronel ruled out any possibility of ecological damage. (Montevideo EL PAIS in Spanish 13 July 94 p 1)

Southern Cone Environmental Roundup for 27 July

PY0108204794

[Editorial Report] The following is a compilation of reports on environmental issues monitored through 27 July.

Bolivia

Environment and Natural Resources Secretary Jaime Munoz has reported that 80,000 to 90,000 hectares of forest are currently destroyed per year to build settlements and to be used for agricultural production and wood exploitation. He said 51 percent of the country, 55 million hectares, is covered with forest. Forestry Development Center Director Alberto Escalante said settlers currently occupy 500,000 hectares of forest, of which 200,000 hectares have been devastated in the past 40 years. (La Paz PRESENCIA in Spanish 26 Jul 94 Second Section p 1)

Brazil

The Ozone Technical Group has delivered a detailed document containing more than 50 pages and various annexes to the coordination group that control the commitment of the Montreal Treaty on gases that harm the ozone layer. The document shows that Brazil needs at least \$969 million to implement this project through the year 2005. It states that plants to recycle chlorofluorocarbons and other gases will be built during this period. (Sao Paulo AGENCIA ESTADO in Portuguese 1841 GMT 25 Jul 94)

The glass, paper, tin can, and aluminum recycling program has been successfully launched. The recycling of 245,000 metric tons of tin cans, 200,000 metric tons of aluminum, 480,000 metric tons of paper, and 300,000 metric tons of glass have generated more than \$1.2 billion profit for the country. Recycling also caused a drop in energy consumption. Some \$1.5 million will be

invested in a pilot plant for the production of biodegradable plastic. It will become operational in November or December. (Sao Paulo O ESTADO DE SAO PAULO in Portuguese 27 Jul 94 p A16)

Chile

A study released by the Biochemical Department of the University of Chile Medicine School on 24 July shows that carcinogenic substances have been detected in the Santiago's air. Dr. Lionel Gil reported that they mainly affect the respiratory system and that their effects appear over 20 to 30 years. Experts say the toxic cloud over Santiago during the winter is 5,000 meters high and makes the capital one of the most contaminated cities in the world. (Madrid EFE in Spanish 2334 GMT 24 Jul 94)

Diplomatic sources on 27 July reported that the shipment of a reportedly toxic material stored on the Bolivian-Chilean border will not enter Chile. La Paz authorities have stated that antimony is not harmful to the health and environment. Recent laboratory tests show it is nontoxic. The Bolivian Government reported that the controversial shipment contains a gold and antimony compound that was imported by a private mining enterprise because Bolivia has the technology to separate these elements. It adds that misinformation circulated following the release of a bad odor from the antimony, which alerted ecologists. Chilean Deputy Guido Girardi said the shipment contains toxic materials and that the gold was added to allow it to enter Chile for recycling. (Santiago Television Nacional de Chile Imagen Internacional in Spanish 0100 GMT 27 Jul 94)

BRAZIL

Environmental Cooperation Agreement Signed With Russia

PY2607123694 Brasilia Voz do Brasil Network in Portuguese 2200 GMT 25 Jul 94

[Text] Brazil and Russia have signed an environment cooperation agreement by which the two countries promise to implement the measures adopted at the UN Conference on Environment and Development that took place in Rio de Janeiro in 1992. Brazilian Ambassador to Moscow Sebastiao do Rego Barros said the agreement will become effective within the next three months since the only points to be settled are specific points defined by Brazilian and Russian experts [begin recording]

Rego Barros: This is a long term program. We want to begin within three months with concrete measures and then continue this cooperation, seeking new environmental fields in which to cooperate. There is even the possibility of involving other countries at a later date. [end recording]

The agreement was signed by Russian Deputy Foreign Minister (Giorgi Menegas) and Itamaraty Secretary General Roberto Abdenur, who is in Moscow discussing with

Russian officials the possibility of increasing exchange between the two countries, especially in the fields of foreign trade and science and technology.

CHILE

Government Warns Bolivia on Shipment of Toxic Wastes

PY0508163094 Santiago EL MERCURIO in Spanish 26 Jul 94 pp C1, C8

[Excerpt] Chile has told Bolivia that it will enforce international agreements on toxic wastes under which it can prohibit toxic waste from passing through Chilean territory.

The Chilean Foreign Ministry thus referred to a toxic waste cargo from Germany that entered Bolivia through Arica in February 1993.

Chile and Bolivia have signed treaties which guarantee the free transit of merchandise and persons through Arica.

Because it constitutes a potential health hazard for living beings, the Environment Policy Institute reported that the cargo—470 metric tons of toxic waste, mainly antimony—will reportedly be reexported to its port of origin in the next few days.

The storage of this cargo in Quime, Bolivia, has caused several protests in the last few days because it has reportedly contaminated the environment and killed persons and animals. In response to several claims, courts from several Bolivian provinces have ordered that the cargo must be transferred to another site. La Paz Judge Jose Gonzalo Valenzuela has ruled that the shipment be transferred to a place called General Perez, 46 km from the Chilean border.

Chilean officials are unaware of what industrial or chemical products were used to treat the waste in Bolivia. In view of this it cannot be determined whether the cargo has the same toxicity as when it went through Chile over one year ago.

Following reports in Bolivia, an investigation was undertaken in Arica yesterday to establish any irregularities in the statement of dangerous cargo issued by the entities involved, among them the Port Company, the Health Service, and several travel companies and agencies.

Foreign Ministry Under Secretary Jose Miguel Insulza said that when it passed through Chile, the cargo was labeled "concentrated antimony" and fulfilled shipping safety requirements.

Insulza stated that Bolivian officials have not officially informed they intend to reexport the cargo. He added that if the press reports are correct, the cargo should comply with a series of requirements, among them,

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

shipment in appropriate containers to guarantee safe-handling during its transit through Chile; to have a destination port; and to have a ship ready for its transportation.

Insulza recalled that Chile adheres to international regulations established in the 1989 Basilea Convention on toxic wastes, that was signed by Chile in 1992.

There is also a treaty signed with Bolivia in 1937 which regulates the transit of hazardous toxic animal and vegetable substances. Chile believes this treaty is applicable to toxic waste.

Moreover, Insulza insisted that Chile guarantees Bolivia the right of free transit through its territory but will enforce international treaties if the Bolivian Government decides to reexport this controversial cargo.

He said that if the presence of other toxic waste shipments are confirmed, "we will probably need to review with Bolivian officials current, pertinent regulations." [passage omitted]

Swiss Deadline for Repayment of Credit Line for Environmental Protection Extended

*PY3007011594 Santiago Television Nacional de Chile
Imagen Internacional in Spanish 0100 GMT 29 Jul 94*

[Text] Switzerland, which is a leading country in textiles, perfumes, and bank institutions, will intensify its technological and financial cooperation with Chile. The chief of the Swiss Public Economy Department today extended the deadline for repayment of a Chilean line of credit. [begin recording]

Unidentified reporter: Jean-Pascal Delamuraz is the highest Swiss official who has ever visited our country. In Switzerland the executive branch is held by a collegiate body. Delamuraz was president of that body, which is equivalent to president of a Republic. He is currently the chief of the Public Economy Department. After meeting with President Eduardo Frei in La Moneda Palace, Delamuraz signed an agreement with Chilean Foreign Minister Carlos Figueroa extending the deadline for repayment of a line of credit for the protection of the environment in Chile. This meeting is part of the diplomatic actions our country is taking toward Europe, such as the visit paid recently by the Spanish foreign minister. Delamuraz, who came with a delegation of important businessmen from Swiss banks and transnational companies like the Nestle Company, said that the interest in strengthening commercial links is reciprocal. [end recording]

NICARAGUA

Pollution Endangering Managua Water Supply

*94WE0275A Managua BARRICADA in Spanish
21 Apr 94 p 9*

[Commentary by Salvador Montenegro]

[Text] In a previous article I talked about the problem of the underground waters near Asososca that have been contaminated by a lethal combination of toxic wastes dumped there by nearby industries. The warning as to the possible presence of phenolic compounds is just the tip of the iceberg.

It looks as though Managua will not be able to use Asososca as a water source for a few hundred years, but after all it provides only 10 percent of our supply. This is not as serious and uncontrollable a problem as another that has been less well known until now: the contamination of the most important section of the Managua aquifer (which can supply 70 percent of our needs) by underground waters from Masaya.

As is already public knowledge, the 220 square kilometers of the Lake Masaya watershed have been severely damaged by deforestation, major erosion, poor farming methods, highly toxic and persistent agricultural chemicals, raw sewage, pathogenic bacteria, urban garbage containing nonbiodegradable waste, and other problems.

As a result of natural processes, this undesirable agglomeration reaches the waters of Lake Masaya and is rapidly defiling this beautiful natural resource. Pesticides in particular are turning Lake Masaya (and perhaps the wells around it too) into a chemical solution the consumption of which by humans is not to be recommended.

All of this has been well-documented and, fortunately, is now the focus of civic concern, as action has been taken to raise the awareness of the population. The potential scope of this serious environmental destruction is not limited to Masaya, however, inasmuch as an underground stream running from Lake Masaya northward toward Sabana Grande as far as Xolotlan has recently been discovered. On the surface, the watersheds of Lake Masaya and Managua are separated by natural divisions; underground, they are connected.

SOS, Before It Is Too Late

This stream is a blessing, because large amounts of water can be extracted from the Sabana Grande and Ticuantepe areas to meet the requirements of the growing city, as long as these waters are free of the aforementioned toxic wastes. No treatment can clean this water once it has been polluted.

For this same reason, we must warn of the imminent danger that the Managua aquifer will be contaminated with pesticides and other toxic wastes from severely polluted Lake Masaya.

We do not know how fast this Sword of Damocles might materialize and how large it might be; thus, the basis for the warning remains hypothetical until follow-up studies are conducted.

However, action to clean up and protect the basin must not wait for such studies. The problems of the Lake

Masaya watershed (such as sewage, toxic wastes, poisonous residues of pesticides, pathogenic bacteria, and poor farming methods) must be resolved by the government and the citizenry before they appear in the next glass of water that you drink.

Cassandra, who was loved by Apollo and endowed with the power to predict the future, spurned him and as punishment was condemned never to be believed by anyone, after which she was driven to despair when she saw the disasters that she had foretold and that no one helped to prevent. This made her realize that reality can be worse than the most pessimistic predictions if they are not heeded in time.

PERU

Ecuadoran Reports of Maritime Nuclear Contamination Denied

PY2707220494 Lima EL COMERCIO in Spanish
19 Jul 94 p A1

[Text] Executives of the Peruvian Institute of Nuclear Energy (IPEN) yesterday denied that samples taken of Peruvian sea water have revealed contamination with radioactive elements, as asserted by press reports datelined Quito.

The reports stated that radioactive Cesium-137 atoms had been detected in Ecuadoran, Peruvian, and Chilean sea waters as a consequence of the French nuclear tests on the Mururoa atoll some years ago.

Captain Luis Gamarra Elias, retired, IPEN president, pointed out that as a result of an agreement reached last year with the Ocean Institute of Peru (Imarpe) a periodic sampling of sea waters, sediments, and species is carried out to prevent that kind of contamination.

He said that the latest tests had been carried out in May with sea water samples taken from central Peru, and that the presence of polluting elements with an origin in nuclear explosions had not been detected.

He stated, however, that it has been decided with Imarpe—as was reported by EL COMERCIO yesterday—that the ship SNP-1, which is sailing from Paita to El Callao, will take new samples of water and species in order to be able to present an exact and updated test.

The IPEN director estimated that the results of the tests will be ready a week after the ship arrives. It is scheduled to arrive on 31 July.

On the other hand, IPEN Executive Director Conrado Seminario Arce recalled that the reports from Quito spoke of "preliminary tests" carried out by the Atomic Energy Commission and the scientific research ship Orion, which belongs to the Ecuadoran Navy, and that the conclusions of these tests need to be more precise.

Arce added that Ecuador could not have taken samples from Peruvian territorial waters, which are not under its

jurisdiction. Therefore any mention of Peruvian waters in the reports would be a mere reference.

IPEN authorities made these comments during a news conference at IPEN headquarters in San Borja.

URUGUAY

Government Issues Decree To Control Toxic Substances

PY2907211794 Montevideo EL OBSERVADOR
ECONOMICO in Spanish 25 Jul 94 p 26

[Text] The executive branch will control the use and handling of toxic and hazardous substances within the national territory, from their importation to their final disposal. This unprecedented type of control in Uruguay seeks to protect human health and the environment through a preventive approach.

The executive issued a decree declaring of general interest the preservation of the environment against any damage that may result from the use and handling of toxic and hazardous substances.

These adjectives are to be applied to elements or materials that because of their characteristics, amount, or combination may be either directly or indirectly potentially hazardous for human, animal, or plant health; damaging to the environment; or harmful or bothersome to human beings or goods.

Toward that goal, the Ministry of Housing, Land Improvement, and Environment (MVOTMA) will have at its disposal a National Register of Toxic and Hazardous Substances, which will enable the regulation and control of substances from their importation to their handling, use, and final disposal of toxic waste.

Technical sources close to MVOTMA's environmental direction told EL OBSERVADOR that to date the only register Uruguay had was the one on pesticides put together by the Ministry of Livestock, Agriculture, and Fishing. They went on to say that the National Register will include a much broader spectrum of all chemical substances, and that rather than a list of products it will be a tool for controlling these substances. This may entail their banning, monitoring, or restricted use.

The drafting of the National Registry has been entrusted to MVOTMA; the Ministry of Industry, Energy, and Mining; the Ministry of Labor and Social Welfare; the Ministry of Public Health; and the Ministry of Livestock, Agriculture, and Fishing.

The decree moreover establishes the setting up of a permanent coordinating commission made up of the delegates of the ministries involved in the compilation of the register.

This commission will be in charge of drawing up a harmonized system of definitions and classifications of toxic and hazardous substances to be incorporated into the National Registry.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Furthermore, it will coordinate and recommend to the appropriate agencies the measures that it deems necessary for the regulation, restriction, or banning of toxic and

hazardous substances. It will also monitor the activities linked to the importation, production, handling, use, and final disposal of toxic and hazardous substances.

IRAN

Official Asserts Country 'Seriously Employing All Means' To Protect Ozone

*LD0208135994 Tehran IRNA in English 1007 GMT
2 Aug 94*

[Text] Kerman, Aug. 2, IRNA—A senior official in Environment Protection Organization said that like other world countries Iran was seriously employing all means to protect the ozone layer. The Organization's research deputy, Nasser Moharram Nezhad,

said here Tuesday that on the basis of commitments to the United Nations Environment Programme (UNEP), his organization has to clear the country from elements damaging the ozone layer up to the year 1996.

Moharram Nezhad further said that the discharge of the industrial wastes to the rivers has contributed a lot in the pollution of most of the rivers in Iran. He added that the industrial units should be located in places where their wastes would not damage natural resources and environment.

RUSSIA

Wisdom of Krasnoyarsk Nuclear Plan Doubted

MM0508083194 Moscow IZVESTIYA in Russian
2 Aug 94 p 4

[Report by Aleksey Tarasov: "Secret City's Future Following President's Visit"]

[Text] Krasnoyarsk—Television and news agencies have reported almost everything about President B. Yeltsin's stay on Krasnoyarsk soil. But a meeting which has not taken place cannot get onto the screen or into news summaries. Although the actual cancellation of the previously scheduled conference in Krasnoyarsk-26, involving ecologists and radiation safety council members—the side rejecting the idea of constructing the RT-2 plant for reprocessing spent nuclear fuel—is remarkable.

Let me remind you that in 1992 two reactors producing weapons-grade plutonium at Krasnoyarsk-26's mining and chemical combine were shut down. Shutting down the last reactor is problematic—it provides two cities with heating. Construction of the RT-2 plant, begun in the Brezhnev era, was frozen with the onset of perestroika. With the president's visit to this island of the nuclear archipelago the knot of problems—lack of money has already reached a point whereby specialists, after completing their shift, refused to come up from the underground nuclear chamber (the production facility is located deep inside a mountain)—has started to unravel. Yeltsin stated his position even before he had visited the RT-2 first phase—the fuel assembly storage facility. Outside its doors he said: "Before the end of September I will write an edict on the combine's future. Of course the last reactor will be taken out of operation before 2000. We do not need weapons-grade plutonium. We must complete RT-2's construction and construct a modern nuclear thermal power station under IAEA [International Atomic Energy Agency] control."

Meanwhile, according to a statement published the other day by a number of Krasnoyarsk specialists who have united in a public ecological safety council, the kray environmental protection committee has declared that the technical and economic case for the RT-2 plant has not been inadequately made. But the capital's bureaucrats made a purely formal reply, citing nonexistent articles of laws. The public's proposal concerning the need for an expert ecological study at kray level is being completely ignored.

Experts here, in the United States, and in a number of other countries cite many arguments against the plant's construction. Here is what Krasnoyarsk inhabitant A. Bolsunovskiy says: "In 1978 the U.S. Congress imposed a moratorium on reprocessing nuclear fuel and using plutonium as fuel for AES's [nuclear electric power stations]. One of the aims is to prevent the proliferation of plutonium to countries which could use it to manufacture nuclear weapons. Some countries joined the

moratorium, but the USSR continued working on the reprocessing of fuel and the use of plutonium. With the result that tens of tonnes of plutonium were stockpiled in the country. After warheads have been dismantled and RT-2 has started up we will get hundreds of tonnes. There is no guarantee that some of this plutonium will not end up in third countries. And it takes only a few kilograms of plutonium to make a warhead.

Besides the political arguments, ecological fears are of course being expressed. The reprocessing of spent fuel is accompanied by the formation of a large quantity of radioactive waste. Can we rule out a leak into the environment of radionuclides with a half-life of hundreds of thousands of years? Opponents believe that the fuel and energy department has not adequately studied questions associated with the plant's effect on the Yenisey River, the environment as a whole, and the region's population. In the opinion of Krasnoyarsk expert V. Khizhnyak, the RT-2's construction on the open bank of one of the planet's largest water arteries, in a taiga zone, near a city of a million people, cannot be allowed.

The RT-2 plant is just the initial stage of the closed fuel cycle. Other facilities will inevitably have to be constructed after it. Incidentally, to complete RT-2's construction alone will cost over two trillion rubles [R], IZVESTIYA was informed by V. Savelyev, its director. The question is whether the expenditure is justified and whether the plant will be overburdened. It is quite obvious—from the Chelyabinsk example and the available information from Krasnoyarsk-26—that Siberians will be able to attract rich foreign clients if they offer additional services such as burying other people's waste following fuel reprocessing. This, Bolsunovskiy believes, is tantamount to turning a gigantic territory into a thousand-year burial ground. This would violate the Law on Environmental Protection, which bans the import of radioactive materials with the aim of storing and burying them on Russian Federation territory. A whole host of Asian and European countries is already showing interest in the project to complete RT-2's construction.

Of course, the Atomic Energy Ministry has its reasons. The problems of constructing the RT-2 plant, which are in general extremely pertinent to the future of nuclear power engineering, are complex and require a separate and thorough discussion. Now it is a question not of whether to construct it or not, especially as a reply has already been given, but of whether to give complete information, a true picture to the public. If the project is irreproachable, why not let local specialists assure themselves of this and carry out a dual-level (federal and kray) ecological expert study? Why has the local ecologists' wish to put their arguments to the president been ignored?

Against this background there is a strange ring to the statement delivered on the banks of the Yenisey by Presidential Council Member L. Smirnyagin: "Siberia

may have reached a new boundary: The period of extensive, colonial development is coming to an end, and a transition to a more mature phase and a different quality is needed, which will enable Siberia to become a region which Russians inhabit not just on behalf of the rest of Russia (to prevent the Chinese from getting hold of the land, as people used to say), but for their own sake. But the president wanted to talk directly to the Siberians before state decisions and programs emerge."

They talked. Judging from the situation regarding the RT-2 plant, the center is sticking to its previous role, while the Siberian bosses will not oppose very strongly the old style of mutual relations.

For a long time both the Gaydar and Chernomyrdin governments would not agree to a differentiated approach to Russia's Asian regions. For example, because of the remoteness of the markets for selling Siberian raw materials it is easier to set preferential transport tariffs for taiga regions and subsidize the Transsiberian Railroad than to "land" the budget with timber, coal, and other exporting enterprises, or else whole regions which were categorized as donor regions. The situation, which could not be simpler, is nonetheless only now being understood in the capital. The president has promised to help. Maybe Moscow's intentions were good, but while not wishing the fate of a colony and raw materials appendage to befall Siberia, by isolating it from the world it has probably condemned it to the development of processing sectors. But can this not be done by a cavalry charge? By all accounts leaders are now ridding themselves of the illusion, realizing that the Siberian raw materials extraction industry will prevail in the country's economy.

One way or another Siberians should expect financial injections, specifically into the development of the raw materials base and ecologically dangerous production facilities. That is why we need to devise a mechanism for public hearings into new and old grandiose projects. The ecological state of a number of rayons is almost catastrophic, and the construction of dangerous production facilities cannot be allowed without an expert study of the project materials by local specialists.

Krasnoyarsk-26 veterans told me that only N. Khrushchev's arrival at the beginning of the sixties could have curbed the generals' fantasies and stopped the underground construction. The military wanted to locate a branch of the Korolev bureau producing satellites and "Krasmach" [Krasnoyarsk Machine Building Plant] shops in a rock face, next to reactor and radiochemical plants, to protect them from nuclear attack. The underground "smithy" was to have supplied not only filling for atomic bombs but also guns and missiles. In general, it was to have forged a complete nuclear missile shield for the Motherland. Had it not been for Nikita Sergeyevich, maybe people would have been sent to the surface from the autonomous underground city only in order to be carted off to the cemetery. It is said that Khrushchev lost

his temper when he saw a hospital in this underground kingdom—what fool (the epithet was stronger and more precise), he asked, could have thought of concealing a hospital underground? How much of the people's money has been poured into this? And he rejected the generals' plans.

Last Thursday [28 July] the nuclear department took its revenge.

Conference Urges Better Antiradiation Protection

MM2807095394 Moscow *RABOCHAYA TRIBUNA*
in Russian 26 Jul 94 p 3

[Report by Albert Kubarev: "People Are Dying. Documents Are Being Finalized"]

[Text] On the initiative of FITUR [Federation of Independent Trade Unions of Russia], a scientific and practical conference was held in Moscow which discussed a new "Concept for Radiation, Medical, and Social Protection of the Russian Federation Population Subjected to Accidental Irradiation." This document was prepared by the Russian Science Commission, which specializes in problems concerning such protection. A seemingly sound document, but....

"The population's morbidity is increasing in all regions affected by the Chernobyl catastrophe," Vladimir Ivashutin, chairman of the "Rosprofchernobyl" Association and leader of the Federation of Bryansk Trade Unions, said in a conversation with me. "It has increased by 20 percent in our oblast. The most terrible thing is that cancer of the thyroid gland has appeared in children. During the elaboration of new and the review of old legislative and other normative acts, attempts are being made to infringe the rights of working people and their families and to reduce the benefits due to them. If the concept we discussed had been adopted this would have meant that 'there is no Chernobyl problem' in Russia."

The new concept sets a higher level of radiation doses than before. The number of patients is thereby "reduced." Moreover, only the size of the "effective" dose "in the current year" is taken into account and the doses received by a person initially and accumulated after April 1986 are ignored.

The conference appealed to the government, requesting it not to approve this concept without additional work. It is also being proposed that the Ministry of Health and Medical Industry be instructed to create a unified base of medical dosimetric data on each Russian subjected to radioactive exposure. It is also time to think about the state system of treating citizens who have been affected by the Chernobyl and other radiation catastrophes.

Tanker Waits Off Vladivostok for Decision on Nuclear Waste

MM0408132794 Moscow *KOMSOMOLSKAYA PRAVDA* in Russian 4 Aug 94 p 1

[Unattributed report from "Inform" column: "TNT-27 Casts Off"]

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

[Text] The Pacific Fleet tanker TNT-27 left Vladivostok (Maritime Kray) 1 August for Pavlovskogo Bay, several hours from the city, carrying liquid radioactive waste.

The tanker had been in Bolshoy Kamen Bay at the moorings of the "Zvezda" plant, which services the Pacific Fleet's nuclear submarines. At the end of May the tanker TNT-5, which also acted as a storage facility for liquid radioactive waste, left the same bay.

In October 1993 the TNT-27 discharged around 1,000 cubic meters of liquid radioactive waste into the Sea of Japan, provoking a negative response from neighboring countries and the public in the Far East.

INTERFAX was told by the Pacific Fleet Press Center Wednesday that the fleet's radiological and ecological services are systematically monitoring the state of the TNT-27. It is intended that the tanker will remain in Pavlovskiy Bay for at least two or three months until the kray has resolved the problem of the storage and processing of liquid radioactive waste.

Smolensk Nuclear Power Workers Stage 'Open-Ended' Protest Action

MM0308143794 Moscow *RABOCHAYA TRIBUNA* in Russian 3 Aug 94 p 1

[Report by Svetlana Sachkova, chief of the Nuclear Power Industry Trade Union Central Committee Press Center: "Playing With Fire At Smolensk AES"]

[Text] Workers in the "civil nuclear" sector are not allowed to strike by law. But what are they supposed to do? None of the staff at the Smolensk AES [nuclear electric power station] has been paid since April. Only one unit is operating, and at a nominal level, owing to a fuel shortage. Electricity consumers' debts had reached 148 billion rubles by August. Promises from the government and the Finance Ministry to stabilize the situation have not been carried out.

People are angry. The collective's state can only be compared to a caldron. The operating staff have decided to begin an open-ended protest action by staying on the station premises once their shift ends.

The operators have been joined by all the other workers. A coordinating committee has been set up and has formulated the demands being made by the participants in the protest. Above all, these are to have debts and salaries paid, to establish a state order for electricity, and to defer payments to the local and federal budgets.

The sector trade union Central Committee Presidium has expressed its support for the Smolensk people. A telegram has been sent to the government and president urgently calling for a commission to be set up to resolve the issues of stabilizing the financial position of nuclear power generation and of enterprises in the nuclear-fuel complex.

Meanwhile a tent city has sprung up on the lawns alongside the entrance to the Smolensk AES. The protest participants intend to stay there until their demands are met.

Expert Says Safe Nuclear Power Engineering Possible

LD0208193094 Moscow *ITAR-TASS* in English 1924 GMT 2 Aug 94

[Article by ITAR-TASS correspondent Marina Barinova]

[Text] Moscow August 2 TASS—"Ecologically-acceptable safe nuclear power engineering can successfully develop in Russia if the Ministry of Nuclear Power Engineering and its organizations employ physicists-experimenters who have worked at modern nuclear power plants," believe State Duma expert and former scientific head of the world's first nuclear power plant in Obninsk, Russia, Professor Boris Dubovskiy.

In his opinion, the accidents at the Leningrad nuclear power plant in 1975 and the Chernobyl nuclear power plant in 1982 that were not reported by the press were not accidental. A reason for the Chernobyl 1986 accident was irresponsibility and the lack of knowledge in reactor neutron physics. The professor voices the need for "personal responsibility for accidents caused by incorrect technical decisions".

The laws "On Nuclear Energy Uses" and "Storage of Radioactive Waste" currently elaborated by the working group of the State Duma Ecological Committee will take into account this proposal, as well as the need for an independent examination of nuclear power plant plans and discussion of original scientific-technical solutions.

Duma Warns Against Neglect of Closed Cities

MM0208161394 Moscow *KRASNAYA ZVEZDA* in Russian 30 Jul 94 p 3

[Report by Aleksandr Yegorov under "In the Russian Federation State Duma" rubric: "Open Problems of Closed Cities. How To Speed Up Their Solution"]

[Text] As we have already reported, last week at the Russian Federation Parliamentary Center on Tsvetnoy Bulvar hearings took place on problems of closed administrative-territorial formations (CATFs). Or, as they are still called, closed cities. Each of these cities was at one time created around a particular major enterprise. Their names are now bandied about: Arzamas-16, Chelyabinsk-65, Krasnoyarsk-26, Penza-19.... But these names are known not only because the most recent Russian history has slightly lifted the veil of secrecy covering the defense sector but also because the mass media have recently started publishing more and more material about the parlous situation of former closed cities. The sharp deterioration has occurred because during the reform of the economy the state, which by special

normative acts had isolated CATF's from participation in market reforms and which had established within them a strict procedure for vital activity (a special entry-exit, residence, and security procedure, and a residence permit regime), has in fact distanced itself from them or simply given up administering them. Thereby precipitating an increase in specific production and socioeconomic problems. Chief among these being the disruption of enterprises' production work regime because of the Russian Finance Ministry's untimely and incomplete allocation from the federal budget of appropriations approved, incidentally, under the state defense order, as well as the nonpayments crisis.

Last year the Russian Federation Atomic Energy Ministry alone received 90 billion rubles [R] less than it was due, R41.7 billion of which was earmarked for meeting the defense order. In the first half of this year the indebtedness increased to R484.5 billion. This means that the financing of state capital investment now stands at 27.1 percent of the prescribed limits, the financing of research and development on civilian projects stands at 47.4 percent, and the financing of specialized finished output stands at 65.4 percent. As regards expenditure on the implementation of international treaties, under this heading the Russian Federation Atomic Energy Ministry has so far received only 12.6 percent of the amount due.

Unfortunately, such staggering figures have already become customary. But today—despite the established custom of not reacting to endless SOS's—I would like the reader to pay attention to them nonetheless. Because it is a question no more and no less of serious complications at enterprises which are fraught with grave danger.

I do not mean weaving factories. I mean nuclear reactors, atomic bombs, intercontinental missiles, and other "bits and pieces," a cavalier attitude to which is fraught with consequences. This being the case, special attention must be paid to the problems of CATF's. Without any ifs or buts. Otherwise especially dangerous production facilities become a factor of national security.

The State Duma Committee for Industry, Construction, Transportation, and Power Engineering initiated the latest hearings because the solution of the problems of CATF's cannot be put off any longer. The old laws and normative acts do not work at all or do not work vigorously enough. Because of the lack of monetary resources the implementation of measures to maintain the safety of and to repair nuclear electric power stations (AES's) has already been wrecked, normative nuclear fuel reserves at AES's have been exhausted, and the preparation of stations to take their 1994-1995 fall-winter period load is threatened with disruption. Insufficient financing of the main production facilities and operational complexes has led to losses of skilled cadres. Unemployment in CATF's is increasing more rapidly than in other regions of the country, and social tension is increasing, which is in turn becoming an additional cause of increased danger.

As Stepan Sulakshin, chairman of the military-industrial complex subcommittee, told the hearings, the situation is approaching the limit beyond which it may be impossible to control global-scale catastrophic processes similar to the Chernobyl catastrophe and the 1957 accident at the "Mayak" Production Association. Life itself demands immediate special measures at the legislative and governmental levels.

Parliament has started the ball rolling. Drafts of the relevant federal laws have already been sent to State Duma committees, the State Duma commission, and deputies' associations for the preparation of comments and proposals.

The ball is in the government's court, and it was recommended by the final document of the parliamentary hearings to complete the elaboration and adoption of a number of decrees: "On Social Guarantees and Compensation for Citizens Living and Working in Closed Administrative-Territorial Formations," "On Ratifying the Statute on the Procedure for Ensuring a Special Safe Functioning Regime for Russian Federation Atomic Energy Ministry Enterprises and Facilities in Closed Administrative-Territorial Formations," and others.

No matter how hard it may be, it is necessary to appreciate the degree of danger of the current situation in closed cities. There can be no experimenting here. Especially as we know the cost of rash experiments with the "atom." After 1986 we cannot pay that price.

Far East Munitions Dumps To Close; Radiation Threat Denied

*MM0208140194 Moscow KRASNAYA ZVEZDA
in Russian 2 Aug 94 p 1*

[Report by Nikolay Litkovets: "Pacific Fleet Scraps Dangerous Ordnance"]

[Text] Vladivostok—It is planned to remove 15 munitions dumps located near population centers and posing a definite threat to the residents of Maritime Kray. Work will primarily be conducted at the notorious Novon-ezhino dump, where there were catastrophic explosions 14 May.

Incidentally, the Navy Press Center categorically denied the reports in some mass media about an allegedly dangerous radiation situation in the vicinity of these dumps.

Agreements on Nuclear Safety 'Finalizes' Process of Withdrawal from Estonia

*LD0208160794 Moscow ITAR-TASS in English
1443 GMT 2 Aug 94*

[Article by ITAR-TASS diplomatic correspondents Aleksandr Krylovich and Valeriy Sevryukov]

[Text] Moscow August 2 TASS—A package of agreements on Russian troops withdrawal from Estonia has

been legalized. Head of the Russian Foreign Ministry's Information and Press Department Grigoriy Karasin told a briefing here today.

The agreement on the procedure and time to lay up nuclear reactors and ensure nuclear and radiation safety on the Estonian Pakri peninsula was signed in Moscow on Saturday to finalize this process.

In the words of Karasin, this document "passes over in the Estonian property by September 30, 1995, the Russian Navy's facility with the reactors and radioactive waste storages located on the peninsula after unloading and transporting to Russia the worked-out nuclear fuel and laying up the reactors".

The agreement specifies the sides' obligations on nuclear and radiation safety when unloading and transporting the worked-out nuclear fuel. The Russian side has confirmed that "neither provisions of this agreement can be used to give the Russian Navy's facility the status of a military base".

The document clearly confirms the rights of Russian specialists, who are laying up the nuclear reactors, and members of their families, including the right to property—houses, apartments and countryside cottages. The specialists and members of their families shall freely bring to Russia their movable property without paying customs dues or other collections.

State Inspectorate Warns of 'Real Possibility' of 'Nuclear Disaster'

AU0108090494 Berlin DIE TAGESZEITUNG
in German 29 Jul 94 p 7

[Report by Barbara Kerneck from Moscow: "Uranium in a Glove"]

[Text] What can happen in a country in which nuclear experts and workers do not get even a tenth of the salaries that are customary abroad? When—as happened most recently after the impounding of six grams of plutonium in Tengen, Baden-Wuerttemberg—the suspicion is voiced that there is a lively trade in nuclear material from Russia, this is always followed by outraged denials by Russian politicians. Thus, at the beginning of this month Interior Minister Viktor Yerin said that not a single case of theft of radioactive material that could be used for the construction of a nuclear bomb is known in Russia.

At least Yeltsin admitted that there had been a number of cases in which uranium and plutonium had disappeared in industry. Viktor Mikhailov, the minister of nuclear energy, on the other hand, has repeatedly denied this possibility, even though at the beginning of this year, in its report to the president, the state Nuclear Inspectorate in the Russian Federation criticized not only the adequate safety of most reactors but, above all, the "disastrous condition" of the nuclear naval fleet. The fleet personnel, the committee said, is dealing with

nuclear material along the lines of a "trial-and-error method," and the commanders are not even trying to raise safety measures to the required level.

The belief of Russian politicians in the gullibility of their people and the world public must be enormous, because the domestic and foreign mass media are full of reports that their country seems to be a gigantic self-service shop for the mafia. In all these cases, the so-called human factor plays a decisive role.

In their recently published book "Russia Explosive," two young German television journalists, Adrian Geiges and Andre Zalbertus, describe the conditions in and around the nuclear port of Murmansk. There nuclear waste is put into intermediate storage on an ice-breaker, where dozens of dockers march in and out without being checked much. A final storage site for the same material, surrounded by a gaping board-fence, guarded by a drunk pensioner in return for a few coins, and without lights, is waiting for Godot in the tundra.

The topic came to Adrian Geiges's attention, when in October 1992 German police discovered a rucksack-sized lead container with strontium 90 and caesium 137 in a locker at the Frankfurt/Main train station. The material had been offered by a Polish dealer on behalf of Russian sellers in the city's red-light district. A month later, Geiges, together with a television team, managed temporarily to remove the same radioactive material from a Russian nuclear ice-breaker in Murmansk. He also managed to get on to the premises of this final storage site near the city without being prevented from doing so, but in the interest of his health, he did not take advantage of this.

In autumn 1993 journalists of the daily NOVAYA YEZHEDNEVNAYA GAZETA conducted a similar experiment. They pretended to be interested in fissionable material and bought highly enriched weapons-grade plutonium on the black market. They were also offered the warhead of an SS-20 missile, which was in private hands. The team also exposed a case in which, in the town of Elektrostal, uranium was taken out of a factory in milk urns.

The affinity of Russian fissionable material with food containers is also proved in the latest report by the Federal Counterespionage Service, which caused great excitement in the country: A butcher from the beautiful town of Pushkin near St. Petersburg thought that in this time of quick money there should also be an opportunity for him to get rich without having to work. Why, after all, he asked, have a relative in a secret factory of the Nuclear Energy Ministry? The relative was amenable and gradually smuggled a considerable quantity of 90-percent enriched uranium 235 in his glove, deceiving the factory guards. When he was finally able to put three kg on his kitchen scales at home, he passed the material to the deliriously happy butcher. The latter took the material home by train, put some of the stuff into a metal

container and some in a half-liter jar for pickled cucumbers, and stored the whole lot in his refrigerator so that it would not spoil.

Occasionally, he took out samples to offer, together with his friends, a pipe-layer and an unemployed man, at the weekly markets in St. Petersburg. There the Counterespionage Service finally noticed the men in June.

Since in Russia it is possible for excellent radioactive material to disappear from the places of its official production and utilization without anybody noticing this too quickly, absolutely no one gives a damn about radioactive waste. The disintegration of the CPSU led to, among other things, the destruction of the Moscow files on illegal nuclear waste disposal sites and undeclared radiation sources in the city area.

The party district executive committees had kept files on them and had discovered 1,200 of them since the beginning of the 1970's. Now the radioactive waste has again been forgotten and buried.

This and the fact that not a single one of the 50 facilities for nuclear fission experiments located in the capital has adequate security measures were recently reported by members of the state Nuclear Inspectorate in an open letter to the Duma deputies. In this letter they asked that nuclear experimentation should cease in Moscow, because there is "the real possibility of a nuclear disaster." However, they are still waiting for an answer.

Official Says 95 Percent of Nuclear Theft Reports 'Wrong'

AU0108102294 Hamburg DER SPIEGEL in German
1 Aug 94 p 61

[Interview with Kirill Sidorov, departmental head at Russia's Federal Counterintelligence Service and "responsible for the protection of strategic armament enterprises," by an unidentified DER SPIEGEL correspondent; place and date not given: "They Are Stalling"]

[Text] [DER SPIEGEL] Nuclear experts say that if the Russian authorities were to cooperate, it could be determined quite precisely where the plutonium found in the FRG came from. Have you already received a sample of the material from the Germans?

Sidorov: Unfortunately, they have not sent us any samples. We are very interested in making analyses in the Kurchatov Institute in Moscow or in other nuclear centers to clarify the matter. If we could analyze the isotope composition exactly, the source of the plutonium could certainly be determined. We know only—from photographs—the container in which the plutonium was kept. Such containers, however, are not used here in Russia.

DER SPIEGEL: In the view of Western experts, the trail leads to Russia.

Sidorov: There is no evidence of that. A total of 95 percent of all reports on nuclear thefts in our country are simply wrong. The IAEA in Vienna has confirmed this. The remaining five percent involve materials that cannot be used for weapons.

DER SPIEGEL: Chancellor Helmut Kohl reportedly gave your President Boris Yeltsin information about the plutonium find in Germany at the G-7 summit in Naples at the beginning of July.

Sidorov: There is no confirmation that such an exchange of information took place. But we urgently need cooperation. In this case, too, we would closely cooperate with the intelligence services in Germany and the United States.

DER SPIEGEL: In Moscow there is a branch of the Federal Intelligence Office (BND) with whom you could talk.

Sidorov: Oh well, this representation is very new here.

DER SPIEGEL: What information have you received from the Germans so far?

Sidorov: Very, very little. With these facts we cannot determine the origin of the material. The BND keeps any further details to itself with the justification that it must protect its own agents. At the political level they are talking about cooperation; at the lower level, however, they are stalling and, at the same time, making propaganda against us.

DER SPIEGEL: What could be the point of this?

Sidorov: We observe that German authorities are increasingly dancing to the tune of those who want to fan the rumors about black marketeering with Russian nuclear material. In Germany and in other countries rumors are put about that enriched uranium, for instance, fetches \$60,000 per kilo. The public is supposed to believe that Russia is no longer able to control the production, storage, use, and transportation of nuclear weapons—which would be a violation of the nonproliferation treaty. On the one hand, they are urging the supra-state supervision of the Russian nuclear complex; on the other hand, demand is being stimulated in the criminal milieu.

DER SPIEGEL: Is this demand now increasing?

Sidorov: The people who have been involved so far seem to be naive amateurs. Believe me: If it were really the mafia involved, it would deliberately dig out precisely what is really needed for a small bomb.

Second Radioactive Waste Tanker Set for Towing to Bay of Pavlovskiy

MM0108131394 Moscow NOVAYA
YEZHEDNEVNAYA GAZETA in Russian
30 Jul 94 p 4

[Report from Valeriy Ivanov column based on information from press service of Ministry for Civil Defense,

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Emergency Situations, and Natural Disasters and INTERFAX under "Environmental News" rubric: "Radioactive Waste"]

[Text] In the next few days the Pacific Fleet tanker TNT-27, which is carrying liquid radioactive waste, will be towed to the Bay of Pavlovskiy, which is situated a few hours' sailing time from Vladivostok, the Pacific Fleet Press Center has announced. This tanker—like the TNT-5 tanker moved to the Bay of Pavlovskiy at the end of May—has been used to store radioactive waste from the Pacific Fleet.

The TNT-5—a tanker built in 1960—has provoked considerable anxiety on the part of specialists from the viewpoint of storage safety. After wintering, considerable damage to its hull was discovered, which could lead to the sudden disruption of its airtightness and the discharge of waste. All precautionary measures have been undertaken to avoid unexpected incidents during the tanker's passage to its new moorage.

Toxic Cloud Formed After Spillage of Rocket Fuel Oxidant in Samara Oblast

LD0108221494 Moscow 2x2 Television in Russian
2155 GMT 1 Aug 94

[Text] A spillage of rocket fuel oxidant from a rail tank car occurred at the Kinel railway station in Samara Oblast this morning [1 August].

According to the Oblast Civil Defense Headquarters, a toxic cloud has formed as a result of the oxidant spillage. The cause of the accident is under investigation, and there is no information about any casualties.

Kostroma Duma Decides To Resume Work on Nuclear Power Plant Despite Opposition

LD0208102794 Moscow ITAR-TASS in English
0930 GMT 2 Aug 94

[Article by ITAR-TASS correspondent Vyacheslav Guskov]

[Text] Kostroma August 2 TASS—The local legislative assembly in Kostroma, north central European Russia, has decided to resume work to design and build a nuclear power station despite protests by local greens, communists and liberal democrats.

The opponents of the project say that the Kostroma region, one of Russia's few ecologically clean areas, gets enough electricity from the Volgorechensk hydropower station.

Two years ago, the local opposition collected signatures in favour of holding a regional referendum on plans for building a nuclear power station here. No referendum was held as regional authorities decided to put the project in the mothballs for the time being.

Local sources say that the unpopular decision to take the project out of the moth balls was made under pressure from the pro-nuclear circles which promised an influx of financial resources to the region's empty treasury.

Radiation High at Site of Novonezhino Explosion

LD2907084394 Moscow ITAR-TASS in English
0749 GMT 29 Jul 94

[Article by ITAR-TASS correspondent Yevgeniya Lents]

[Text] Vladivostok July 29 TASS—"Radioactivity level rose at the premises of the aviation ammunition depots of the Pacific Navy in the surroundings of the village of Novonezhino which exploded last May," the "VLADIVOSTOK" daily reports on Friday.

"Dry wine was included in the July rations catered for commissioned officers of the local garrison. Dry wine is considered to be "an anti-radiation beverage", it adds.

According to the newspaper, the garrison's new commander alerted everybody concerned to the dangerous rise in radioactivity only a week ago. Now chemical defence units have taken charge of the territory.

Muscovites Warned To Avoid Eating Contaminated Fish

LD2907084694 Moscow ITAR-TASS World Service
in Russian 0636 GMT 29 Jul 94

[Text] Moscow, 29 Jul— Muscovites have been warned not to eat fish caught in the city's reservoirs and rivers. Pike in the Yauza River might come in handy as a fuel, since they contain 250 times more petroleum products than the maximum permitted concentration—and the levels permitted in Russia are ten times higher than those in the West. Mutant fish have appeared in the Nishchenko River, where ammonia concentrations are 100 times the maximum permitted.

What is more, RABOCHAYA TRIBUNA reports today that all fish in Moscow's waterways are infected with pathogens that can cause liver disease.

Environment Pact With Belarus Hailed

MM2707151194 Moscow ROSSIYSKIYE VESTI
in Russian 26 Jul 94 p 3

[Interview with Veniamin Popov, head of the Russian delegation at talks with the Republic of Belarus and Russian Federation Foreign Ministry ambassador at large, by Vyacheslav Yelagin; place, date not given: "Contacts: Nature Is the Third Partner"]

[Text]

Yelagin: Veniamin Viktorovich, the results of the elections in Belorussia [Belarus] have made an impression on us all, diplomats and journalists included. How does

the Russian Federation Foreign Ministry today assess the prospects for Russian-Belorussian [Belarusian] relations?

Popov: We respect the choice made by the fraternal Belorussian people. That is their legitimate right. I think that the creative and constructive work to further strengthen bilateral ties between Moscow and Minsk will be continued under the new Belorussian leadership. There is simply no alternative to this normal and natural process of rapprochement between our countries. Take, for instance, cooperation in the environmental sphere, on which an agreement was signed recently.

Yelagin: So far as I am aware, an Intergovernmental Agreement on Cooperation in the Sphere of Protection of the Environment Between Russian and Belorussia was signed recently in Smolensk. This seemingly unremarkable event, as it were, pales against the background of the recent presidential elections and the upcoming unification of the two countries' monetary systems. However, I have heard, including in Foreign Ministry circles, that specialists make quite a high assessment of this agreement.

Popov: Yes, what happened 5 July in Smolensk was indeed an exceptional event which unfortunately did not make it into the "major papers." In my view, it should have been described in greater detail. A meeting took place there that day between two eminent ecologists, V. Danilov-Danilyan and A. Dorofeyev, whose work is well known throughout the post-Soviet space. The significance of the meeting goes far beyond the bounds of purely scientific interests. The point is that these scientists, who head the Russian Ministry of Protection of the Environment and Natural Resources and the Belorussian Ministry of Natural Resources and the Environment respectively, signed the first-ever intergovernmental agreement on cooperation in the sphere of environmental protection in the history of our countries. Without belittling the importance of the other political, economic, military, and humanitarian accords between Moscow and Minsk (the total number of agreements is inexorably heading toward 100), this agreement is trailblazing, as it were, not only in bilateral relations but also in the Commonwealth as a whole.

Yelagin: What is the essence of the agreement and how will it benefit Russia and Belorussia?

Popov: The fight against environmental pollution is a fight not only for clean air, water, and land but also for people's health. People simply will not be able to survive unless they preserve the habitat of animals and the world's flora. And this evil that threatens mankind's existence can be vanquished only through joint actions. Having realized this need, the two neighboring republics will pool their efforts to keep the atmosphere clean, to protect forests from fire, insect pests, and disease, and to protect the fields from pollution by pesticides and mineral fertilizers. Cooperation in the rational use of mineral resources and surface water and groundwater, in

restoring soil fertility, and in combating noise due to technology will also become closer. The sides agreed to coordinate scientific research in this sphere, to improve the economic mechanism for the use of nature and ecological monitoring of the state of the environment, and to elaborate and implement together scientific and technical and integrated programs for the rational and efficient use of natural resources. Specific measures to implement all the plans have been thought out. In short, the agreement will benefit both Russians and Belorussians. Moreover, problems of the joint protection of rivers flowing through the territory of the fraternal states were also discussed.

Yelagin: Why was Smolensk chosen as the venue for the meeting? This was obviously no accident.

Popov: Yes, you're right. This ancient Russian city has a special geographical and political position. It represents a "linking thread of the times" for the peoples of Russia, Belorussia, Ukraine, Poland, and Lithuania. Glorious milestones in the history of our homeland are linked with it. There in Smolensk you get a keener sense of the need for unity with other Slav peoples. But that is just one side of the coin.

The other is that over 1,000 large and small rivers, including the Dnieper, which passes through not only Russia, but also Belorussia and Ukraine, have their source in the central highlands. The question of protecting Dnieper water and the entire Dnieper basin is extremely topical. Its solution promises considerable benefits to the population of Russia, Belorussia, and Ukraine. So leading personnel from Vitebsk, Gomel, Mogilev, Pskov, Moscow, Kaluga, Tver, and Bryansk Oblasts went to Smolensk as well as representatives of central Russian and Belorussian agencies. They all showed tremendous interest in constructive collaboration in the sphere of environmental protection. In addition to everything else, the meeting stressed the importance of environmental education and training and the formation of an appropriate awareness and noted that we are all in the same boat, and the sooner we learn to focus our actions on what unites us rather than divides us, the sooner we will be able to solve the problems confronting our planet.

The environmental meeting in Smolensk was a success to a considerable extent thanks to the great organizational work carried out by the Smolensk Oblast Administration. And the people of Smolensk saw for themselves how important ecology is. The bulk of the work still lies ahead, I think. But the start inspires optimism.

Yelagin: Were measures to eliminate the aftermath of the accident at the Chernobyl nuclear power station discussed?

Popov: The common Chernobyl calamity, and both Russian and Belorussian lands suffered as a result of it, brought us still closer together. The same thought was repeatedly expressed at the meeting: Collaboration

between Russia and Belorussia in this sensitive sphere must be more intensive, diverse, and purposeful. It is no accident that an appropriate agreement on joint actions to minimize and overcome the consequences of the Chernobyl disaster was signed a few days earlier in Moscow by our states' prime ministers. The Russian Government will allocate 22 billion rubles to Belorussia for this purpose.

Foodstuffs Found To Contain Heavy Metals, Antibiotics

MM2707134994 Moscow TRUD in Russian
27 Jul 94 p 1

[INTERFAX report: "We Are Treating Ourselves to Cadmium. Never Mind"]

[Text] The quality of foodstuffs in Russia remains unsatisfactory in terms of many indicators, the Russian Federation State Committee for Sanitary and Epidemiological Supervision claims.

INTERFAX was told by the State Committee that heavy metals—including mercury, lead, cadmium, copper, and zinc—and antibiotics had been found in many foodstuffs in the past few months. Between 12 and 15 percent of samples of dairy and fish products and 7-10 percent of meat samples surveyed in the course of 1993 and the first few months of this year did not meet health standards in terms of their bacteriological indicators.

At the same time, figures from checks carried out by the State Committee for Sanitary and Epidemiological Supervision also reveal a slight decline in nitrates, pesticides, and [other] toxic elements. Hygiene certification of food has been introduced and laboratory controls stepped up.

'Sealing' of Komsomolets' Nuclear Torpedoes Nears Completion

MM2707084394 Moscow Russian Television Network in Russian 0300 GMT 20 Jul 94

[From the "Vesti" newscast: Report over video of mission to make safe sunken Komsomolets nuclear submarine: figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [030313] **Announcer to camera and over video of submersible, footage dated 15 July 1994:** On Tuesday the second stage opened of a planned expedition to the area where the Northern Fleet's nuclear submarine Komsomolets was lost. The expedition comprises two scientific research vessels—the Mstislav Keldysh and the Semen Dezhnev. During the second stage the sealing with special titanium plugs of the sub's torpedoes, including two torpedoes containing nuclear warheads, is to be completed.

According to specialists from the Arzamas-16 All-Russia Experimental Physics Scientific Research Institute and a

number of other agencies, radiation in the area of the Norwegian Sea where the Komsomolets sank in 1989 does not exceed natural background radiation. The absence of raised radiation has been confirmed by a number of foreign specialists, including IAEA experts, who are taking part in the expedition. [030401] [video shows expedition and underwater pictures of Komsomolets]

Oil Spill at Komsomolsk-na-Amure Refinery 'Contained'

MM2707092194 Moscow KOMSOMOLSKAYA PRAVDA in Russian 26 Jul 94 p 2

[Report by Aleksandr Khokhlov: "Black 'Gift'"]

[Text] A serious incident has occurred in Komsomolsk-na-Amure. A 40-tonne oil spillage has occurred through the fault of the controller of a local oil refinery. "Black gold" has spread over an area of about 700 square meters on the plant's premises, but more alarming is the spillage of three tonnes of oil into the Chernyy Klyuch stream.

The press service of the Ministry for Affairs of Civil Defense, Emergency Situations, and Elimination of Natural Disasters has announced that the oil has been contained before reaching Lake Kharbinok. A mopping-up operation is being carried out through the efforts of the plant workers and the city's emergencies network.

Yeltsin Gives Support To Space Crews' Environmental Efforts

MM2707105394 Moscow TRUD in Russian
27 Jul 94 p 1

[Unattributed report including text of Russian President Yeltsin's message to the international environmental expedition: "Space Mission to Taiga. Boris Yeltsin Greets Expedition of Cosmonauts Striving to Draw Attention to Problems of Improving the Health of Our Sick Earth"]

[Text] Our newspaper has already reported that an international environmental expedition of cosmonauts headed by the well-known traveler Jacek Palkiewicz sets off for Siberia 28 July. Taking part in the expedition, which is being staged under the auspices of the TRUD Editorial Board and the Moscow City Bank, are the cosmonauts Sigmund Jenn (Germany), Vladimir Remek (Czech Republic), Clemens Lothaler (Austria), Anatoliy Artsebarskiy (Ukraine), and Gennadiy Manakov (Russia).

Russian President Boris Yeltsin yesterday sent a farewell message to the expedition participants. We are publishing the text:

"Dear Friends, Explorers of Space and Earth!

"You are leaving on a difficult and necessary expedition to Siberia, a land where nature is harsh and rich. I support your desire to draw the attention of people,

governments, and international organizations to the problems of nature conservation.

"Through your dangerous work as cosmonauts you have already served the cause of progress many times. You now want to draw mankind's attention to the dangerous aspect of the intensive and uncontrolled use of nature. I hope that your expedition will help us to gain a deeper understanding of the complex interplay between progress, nature, and human life, and will teach people to take a moral attitude to our planet's flora and fauna.

"I wish you success in your work. May its results serve to promote the mass movement for the earth's environmental regeneration.

"[Signed] B. Yeltsin

"[Dated] 26 July 1994"

Closure of Reservoirs Around Chelyabinsk-65 'Top Priority'

LD2507174594 Moscow *ITAR-TASS in English*
1640 GMT 25 Jul 94

[Article by *ITAR-TASS* correspondent Anna Bakina]

[Text] Moscow July 25 TASS—The concentration of radionuclides in the reservoirs around the closed city of Chelyabinsk-65 exceeds the acceptable norms by several thousand times, according to the results of a study made by the Russian Atomic Ministry. Chelyabinsk-65 was a secret city devoted to the defence industry, where a TNT (non-nuclear) explosion in 1957 damaged a container of radioactive materials.

According to Stanislav Malyshev, deputy director of the Fourth Research Department of the Ministry for Nuclear Power Engineering, polluted territory around the Mayak production plant in Chelyabinsk-65 has long been a "headache" for the ministry. Besides the deplorable state of the reservoirs, experts are mostly worried about Lake Karachay, which has received radioactive wastes measuring 120 million curie. The frequent sandstorms in the area make the matter worse by carrying radiation from the water's surface to areas far from the lake.

The Atomic Ministry's experts' top priority now is to close down the reservoirs and get rid of the danger. The ministry has been implementing a special programme aimed at "closing" the Karachay for several years now, but it is not easy. The whole territory of the lake should be covered with u-shaped blocks so that the radioactive silt stays at the bottom, and the water should be filled in with gravel.

One-third of the work has been completed so far. For the rest of the work, the ministry needs more money, which is, predictably, not forthcoming. The nuclear scientists are astonished by the government's relative calm when the radioactive water from the lake is already leaking into subterranean sources. The quickest intervention is

needed. This month Premier Viktor Chernomyrdin signed an order assigning Mayak 11.4 billion roubles, but that is only a small amount of the required sum.

Plutonium From Komsomolets Could Threaten Herring Fisheries

MM2507141394 Moscow *KOMSOMOLSKAYA*
PRAVDA in Russian 22-25 Jul 94 p 3

[Interview with Doctor of Geographical Sciences Ruben Kosyan, director of the P.P. Shirshov Oceanology Institute's Southern Department, by Gennadiy Bochkarev, date and place not given; "Expedition: Our Submarine Poses Threat to Norwegian Herring"—first paragraph is introduction]

[Text] Gelendzhik—Since the end of June there has been an expedition at the site where the submarine Komsomolets sank. Our correspondent met with Doctor of Geographical Sciences Ruben Kosyan, director of the P.P. Shirshov Oceanology Institute's Southern Department and leader of one of the previous Komsomolets expeditions, and asked him a few questions.

Bochkarev: Unless I am mistaken, you led the third expedition to the submarine Komsomolets. And even though that was two years ago, the findings of the competent specialists who took part in that expedition are still being kept secret.

Kosyan: In May-June 1992 we studied the submarine using the Mir-1 and Mir-2 manned submersibles. Our staffers' mission was absolutely clear—to study the biological and geological background around the submarine and determine how a potential radiation leak might affect the environment. It has to be said that the area where the Komsomolets went down had not been studied very much from the oceanological viewpoint, and we had to establish where precisely the underwater currents would take the plutonium if there were a discharge of radionuclides from the nuclear torpedoes. The fact is that the Norwegian Sea is intensively fished, and it was very important to predict whether a possible discharge of radionuclides would affect the Norwegian herring stock.

Bochkarev: What threat does radioactive pollution pose to the marine ecology?

Kosyan: At the present time the effect of radioactive pollution of the sea on the life of marine organisms there has hardly been studied. No one knows precisely what dose should be considered dangerous. In principle the quantity of plutonium which might escape from the Komsomolets' nuclear warheads is relatively small. But plutonium has a half-life of tens of thousands of years! Individual types of seabed organisms could become accumulators of radionuclides. Those organisms, in turn, are eaten by fish, and that generally speaking is the main danger to mankind. There is a likelihood that this fish will end up on people's tables. There is another unpleasant fact which we have established: In the region

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

where the submarine sank there are periodic powerful underwater currents which, potentially, could reach the Norwegian herring's feeding grounds.

Abandoned Rocket Fuel Oxidant Presents Water Supply Hazard for Polyarnyy

MM2507135994 Moscow KRASNAYA ZVEZDA
in Russian 20 Jul 94 p 3

[Report by Dmitriy Litovkin: "Drink the Oxidizing Agent, Folks, and You Will.... One Hundred and Forty Tonnes of a Highly Toxic Rocket Fuel Component Could Get into the Water Supply System of the City of Polyarnyy"]

[Text] Northern Fleet—This highly toxic oxidizing agent for rocket fuel belonged to an air defense unit previously stationed in Polyarnyy. The unit is no longer here, but the oxidizing agent remains. Without any supervision, naturally. The situation is made worse by the fact that the tanks in which the chemical substance is kept, which exceeded their guaranteed service life three years ago, have not received any technical servicing for a long time. The electricity and ventilation have been switched off altogether, which, given the enhanced concentration of oxidizing agent fumes, leads to corrosion of the casing and the potential escape of the chemical compound into the nearby lake, which feeds into Polyarnyy's water supply system.

Colonel Dmitriy Pasechnik, chief of the Northern Fleet fuel service, who is responsible for tanks containing environmentally harmful liquids, remarked in conversation with your correspondent that the unbalanced economic conditions at plants which reprocess the rocket fuel oxidizing agent are the basic cause of the present situation. All the plants refuse to accept it, while military stores and depots are already chock-full.

It is also impossible in practice to employ an emergency means of neutralizing the dangerous substances because of the expense involved and the lack in Polyarnyy of the requisite number of free containers and neutralizing agents. True, Colonel Pasechnik assured me there and then that ways and means of resolving the problem will be found no later than 1 September this year, when tanks providing an additional 100 cubic meters capacity will be commissioned at a facility specially equipped for the storage of the rocket fuel oxidizing agent.

But the officers's words can reassure few people today. There are other facilities in Northern Fleet garrisons, in addition to Polyarnyy, which contain toxic rocket fuel discarded without supervision. And there is nowhere to remove them to or means available. The fleet scrapped its obsolete tankers for transporting dangerous substances long ago, while civilian organizations simply do not have the necessary ships.

What, then, is the solution? In Dmitriy Pasechnik's opinion, a comprehensive state program for reprocessing the rocket fuel oxidizing agent, with precisely defined

financial and technological backup, is needed. On paper it exists, but in fact.... In fact the inhabitants of Polyarnyy are faced with the real threat of tasting the oxidizing agent....

Pollution of Moscow River, Possible Cleanup Measures Detailed

94WN0351A Moscow ROSSIYSKAYA GAZETA
in Russian 21 Jul 94 p 3

[Article by Natalya Yachmennikova: "When Rivers Die, They May Still Be Cured"]

[Text] [Begin boxed material] The summary indicator of pollution of the bottom silt deposits in the Moscow River by chemical elements reaches 30-400 units in a number of areas. Pollution with organic substances exceeds the background values by 2,000 times.

Fish from the "urban population" exhibit a large number of anomalies and abnormalities. Abnormalities in the structure of the head (up to 40 percent), the organs of sight (up to 50 percent), the shape of the body, and a disrupted metabolism (up to 100 percent) are most often seen.

Fish caught right across from the Kremlin exhibit a high (from 0.01 to 0.03 mg/kg) content of metaphase, whose presence in food products is not permitted.

In the most heavily polluted areas of the river—the mouth of the Yauza and Nishchenka Rivers, the Pererva Hydroelectric Station and the Kuryanovskiy overflow—from one net 25 meters in length poachers get several tens of kilograms of fish in one night. Naturally, it goes straight to the spontaneous markets. [End boxed material]

There are spots of fuel oil on the riverbanks. All of Mendeleev's table of elements is found in a laboratory analysis of the river water. A dirty bottom, where, if you look, you can find anything at all—from sunken ships to sunken logs. In this picture we can recognize the appearance of hundreds of Russian rivers, large and small. We are killing them, and they are dying. And this is our first experience in curing rivers, our first chance to save them.

A real possibility has emerged to at least somehow revitalize a dying river, or at least to make it a bit cleaner. The All-Russian Institute of Mineral Raw Materials and the VNII [All-Union Scientific Research Institute] of Chemical Technology have recently conducted successful tests of an experimental line for cleaning silt deposits which have been raised from the bottom. The so-called bottom deposits in the Moscow River.

"This is only one of the ways of saving the river," says the director of the "Ekogorod" fund, Aleksandr Yesin. "We have embarked upon it as a result of a comprehensive ecological study implemented jointly with specialists from a number of scientific-research institutes at the direction of the State Inspection of Small Vessels and "Moskompriroda."

We must say that this is the first time such work has been performed. And even the "specialists" who have been around and seen many things were surprised at what arose before their eyes. Let us take these same bottom silt deposits. For a long time, no one paid any attention to them: So what, that something is settling there... The main thing that they were concerned with was a proper depth for navigation. And that is why, for example, the Moscow River waterway was cleaned on a regular basis: They dredged out the "excess" soil, took it away and dumped it... once again into the river. In the non-navigable areas.

But what did they dump, we might ask? Combined with the soil were various waste products from enterprises: Toxic chemical compounds of heavy metals, exceeding the allowable standards by many times, petroleum products, nitrogen- and phosphorus-containing compounds, organic chlorides, etc. It turned out that the total amount of polluted bottom deposits today reaches no more or less than 18 million cubic meters.

Yes, mother nature has placed in the rivers a self-cleaning mechanism through benthos—bioorganisms which absorb harmful substances. But this mechanism is gradually breaking down—the load on it is too great. Thus, downstream from Filevskiy catch basin, which is especially polluted, there is not even a hint of any more bioorganisms. They have all died. In the Yauza River, out of 98 species which previously lived there, only one is left.

Studies have shown that out of 35 varieties of fish found in the water reservoirs of the capital, for example in the region of Kuryanov, only two or three may be found. And what a fish this is: Savor it, and you may be visiting your forefathers sometime soon. And also the doctor—precisely. Judge for yourselves. It contains about 125 times (!) more petroleum products than is allowable, and two-three times the amount of zinc, lead and other analogous elements. There are also highly toxic compounds here, helminths, otherwise known as worms, and all kinds of other filth.

In short, the problem of silt deposits which, as it has become clear, cannot be removed and buried without preliminary purification, has announced itself in full voice. At the present time, a principle scheme for their technological processing has been developed. Moreover, there is a complete as well as a reduced cycle. Unfortunately, there are not enough finances at the present time to implement the complete cycle. And so, it is within the framework of the reduced cycle that the experimental installation for purification of bottom silt deposits has been developed. This installation makes it possible to "break down" the complex mixture into its component parts and, specifically, to isolate the sand, which will then be used for another application. As road fill, for example. Then it will be possible to go farther—to use heat treatment and isolate chemical elements—sorbents and coagulants.

Specialists expect that operation of the installation will bring not only ecological, but also economic effect—tens of millions of rubles a year. We might add, this same technology is fully suitable also for isolating the sediment at aeration stations, sediment tanks in car washes, etc. The latter, we might add, are not accepted anywhere, and they are built practically in secret.

Yet bottom silt deposits are not the only "illness" of the river. There are also the "toplyaks" [submerged logs], or mass collections of logs and sunken vessels. And while we have more or less moved off of the zero point on the problem of the silt deposits, here the situation is more complex.

The submerged debris has collected primarily in the region of the Khimkinskiy water reservoir, which since the 40's has been the location of lumber markets. Logs from the entire oblast were floated here to be sorted. The good logs were immediately floated down to their destination, while the poor quality wood sank to the bottom, in the direct sense. Today the logs form entire barricades, "bonfires," dams under the water. They do not really hinder navigation, and for this reason the attitude toward them is rather cool. Especially since there are no valuable varieties of wood there, and it is unprofitable to pull it out. And so the wood rots, emitting harmful phenol.

The situation is about the same also with sunken vessels. Each year, there are more and more of them, and the river is gradually turning into a burial ground of rusting river trolleys, barges and cutters, among which there are some seagoing fishing vessels. How many of them are there now? Around forty—that is right.

It is difficult for the rivers today, and it is difficult for those who are striving so hard to help them. Many fundamental directions of ecological studies have simply been frozen. Yet it is clear that we must save and restore the rivers today. Now. Because for our rivers, there simply may be no "tomorrow."

Ecological Impact of Technological Accidents Discussed

94WN0351B Moscow ROSSIYSKIYE VESTI—
RETSEPT in Russian 22 Jul 94 pp 1-2

[Unattributed article: "People Are Dying for Metal?"]

[Text]

Chronicle of an Accident With Consequences

According to the data of the informational center of the MChS [Ministry of Extraordinary Situations] of Russia, in 1993 there were 923 accidents of a technological character, in which 1,050 persons died and 3,232 were injured (in 1992 these figures were 870 and 2,523, respectively). Also, there were 250 accidents of a natural character, in which 7,017 persons were injured and 130 were killed. In the five months of the current year, there

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

have been 489 accidents of a technological character, in which 811 people were killed.

Despite the significant reduction in volumes and rates of production, an increase is being noted in the number of accidents of a technological character (by 20 percent), in the number of casualties (by 20 percent), and in the number of injuries (by 28 percent) as compared with 1992.

The primary source of ecological troubles are accidents of a technological character accompanied by emissions and dumping of pollutant chemicals, radioactive or biological substances and materials into the environment. Here are just a few of the major accidents of a technological character which had ecological consequences in 1993.

In April in Krasnodar Kray (village of Vitim), due to a break in the sewage line there was fecal contamination of the drinking water in the water main, which led to an outbreak of dysentery (151 persons were hospitalized).

In June in the village of Mauk in Kalininskiy Rayon of Chelyabinsk Oblast, due to a defective tank, around three tonnes of ammonia were spilled onto the ground, which got into the water collectors of the city of Kasli. The ammonia concentration in the water exceeded the maximally allowable concentration by 1.5 times.

In July in St. Petersburg, as a result of the rupture of an oil pipeline, 60 tonnes of fuel oil leaked into the Murzinka River, which empties into the Neva.

In August on the Sheksna River, the steamship "Vologoneft-124" belonging to the joint-stock company "Vologotanker" and carrying a cargo of diesel fuel (4,019 tonnes), collided with the barge "Belskaya", which was loaded with 3,600 tonnes of diesel fuel. The accident occurred within 10 kilometers of the city of Cherepovets. The barge sustained a ruptured hull, and there was a spillage of the petroleum products.

On 26 September in Irkutsk Oblast, in one of the shops of the AO [joint-stock company] "Sayanskkhimprom", a ruptured pipeline caused the emission of 300 cubic meters of chlorine gas.

In August, along the span of railroad line between Chikali and Kishert of the Perm section of the Sverdlovsk Railroad Line, there was a derailment of 16 tanker cars carrying petroleum products. Around 240 tonnes of petroleum products were spilled into the Slyva River (tributary of the Kama), which was polluted for an extent of 60 kilometers. The water collector was closed for seven days, and the supply of drinking water to the city of Kungur and its adjoining populated areas was interrupted.

At the enterprises and facilities controlled by the Gosgortekhnadzor of Russia [Russian Federal Mining and Industrial Oversight], a specific decline in the state of industrial safety and fire protection was noted in 1993.

The most dangerous in its ecological consequences in the oil drilling sector were the nine open gushers with uncontrolled output of oil. Two of them—the gusher at the Komsomolskiy deposit of the "Tyumenburgas" enterprise of the RAO "Gazprom", which was formed in August of 1992, and the one at the PO [production association] "Sakhalinmorneftegaz" formed in October of 1991, have not been capped up to the present time.

There were 57 accidents recorded along the main oil, gas and product pipelines, which were accompanied by losses of raw materials, occurrence of fires, and pollution of extensive territories.

During the shipment of hazardous cargo along the railroads of Russia, there were 20 accidents and collisions of trains loaded with or carrying remnants of dangerous cargo. Within the limits of such large cities as Moscow, St. Petersburg, Volgograd, Saratov, Perm, Yekaterinburg and others, derailments and collisions of trains carrying dangerous cargo caused the dumping of 1,600 tonnes of petroleum products, 80 tonnes of rarified gasses, and 350 tonnes of various chemical cargo into the surrounding environment.

According to the data of the Federal Analytical Center of the Minpriroda of Russia [Russian Federation Ministry of Environmental Protection and Natural Resources], in 1993 there were 134 recorded accidents with ecological consequences, which comprises 15 percent of the total number of technological accidents.

The greatest number of such situations was associated with the dumping of oil and petroleum products. They comprise 57.5 percent of the total number of technological accidents with ecological consequences. Eighteen percent are associated with accidents along main pipelines, 29 percent—with accidents in railroad transport, and eight percent—with accidents on cargo vessels. Thirteen percent of the accidents were accompanied by emission of ammonia.

In the territorial plane, we must note a high and stable density of ecologically dangerous accidents in Tyumen, Samara and Kemerovo Oblasts, and in Krasnoyarsk Kray.

At facilities controlled by the Gosatomnadzor of Russia [Russian Federal Oversight of Nuclear and Radiation Safety], the following situation was observed in 1993. Despite the 200 violations in the work of the AES [atomic power plants] of Russia, the level of their operation improved in 1993 as compared with 1992, in terms of the number of violations per power generating unit. No incidents categorized as "accident," fire or flare-up were registered.

At the enterprises of the fuel cycle there were two accidents and two incidents (Siberian Chemical Combine and three times at the enterprise of the PO "Mayak").

According to the data of the Federal Information-Analytical Center of the Minpriroda of Russia, of the total number of accidents of a natural character, around 85 percent were marked by various ecological consequences. The most significant were illnesses of people and animals—36.3 percent.

An analysis of the accidents for 1993 shows that the main reasons for the increase in the number and seriousness of ecological consequences of accidents, catastrophes and natural disasters were: Decline in industrial safety of production, associated also with change in the form of ownership of hazardous facilities; inconsistency of policies of siting production capacities, leading to a concentration of high-risk productions and facilities on small areas in practically all the regions of Russia; absence of economic mechanisms for safety provision; absence of an integral standard-legal base in the sphere of protection of the population and territories against technological accidents, natural disasters and catastrophes; insufficient effectiveness of the system of emergency response to accident situations.

100 Billion Lethal Doses

A rather complex situation has been formulated in the sectors of the chemical complex. Huge masses of harmful products have become concentrated in the production areas of chemical and petrochemical enterprises.

In the large industrial regions—Angarsk, Usolye-Sibirskoye, Kemerovo, Ufa, Sterlitamak, Dzerzhinsk and others—the combined presence of harmful and highly toxic products in production areas comprises: For chlorine—100 billion lethal doses for man, and an equal amount for ammonia and cyanide.

The energy content of explosive products concentrated on one hectare of industrial area of chemical, petrochemical and oil processing enterprises comprises up to 30,000 tonnes, when recomputed to their trotyl equivalent. In the case of a chain reaction of accidents at such enterprises, the scope of the negative consequences would be difficult to predict.

Thus, in the case of a major accident with ethylene oxide at the PO "Kapolaktam," the greatest distance of dispersion of the contaminated air may comprise 80 km, and the possible area of contamination would be 19,300 square kilometers, which are inhabited by 290,000 people.

According to expert evaluations, in the Dzerzhinskiy region, if a seal is broken on a tank containing chlorine (singular capacity 45 tonnes), the maximal distance of dispersion of the contaminated air with a lethal concentration may comprise up to 40 km, and encompass an area of 5,000 square km, on which 285,000 people live (91 percent of the city's population).

The catastrophes at enterprises which have occurred in recent years, the continuous local explosions and cases of destruction of facilities with human casualties, and the

contamination of the atmosphere and the water reservoirs in a number of oblasts all testify to the critical situation which exists within the complex technological systems of enterprises of the chemical complex. In 1992 alone, there were 82 accidents which entailed destruction of the production installations and emission of considerable volumes of harmful substances at enterprises and facilities of the chemical complex. The economic loss comprised 55.7 million rubles (R).

In 1993 there were 83 non-categorized accidents and category II accidents, the economic loss from which comprised R72 million. Despite a slight reduction in the accident rate in the current year (in five months there have been 12 non-categorized accidents), the economic losses have significantly increased, and comprised R162 million.

Every year at the enterprises or sub-sectors of the chemical-lumber complex there are over 20 million tonnes of solid and liquid by-products produced, of which only 40 percent are utilized.

An extremely complex situation has arisen with the storage, decontamination and burial of hazardous waste. Such a situation has already led to huge stockpiles, and in a number of regions has created the prerequisites for an ecological crisis.

Thus, the "Krasnyy Bor" site for burial and processing of toxic waste, which is located in Tosnenskiy Rayon of Leningrad Oblast, has exhausted the capacities of safe operation due to overfilling of its storage facilities with chemical waste and absence of current technologies for its processing.

This site, which comprises an area of 50 hectares, receives non-recyclable waste from 600 enterprises in the city of St. Petersburg and Leningrad Oblast. The greatest hazard is posed by compounds of mercury, lead, fluorine, arsenic, phosphorus, cyanide and its salts.

Of six open pits intended for the accumulation of liquid organic waste, four have been overfilled to the level of the top rim of their clay lock, which is in violation of the sanitation standards. The liquid waste from closed pits seeps into the ground water, the Bolshaya Izhora River, and the Neva River.

Evaporation of toxic substances from the surface of open storage facilities and burning of the waste in furnaces without purification lead to pollution of the atmospheric air in the region of the site and the residential zone of the village of Krasnyy Bor. According to the evaluations of specialists, the problem of the waste collection site may only be solved by means of building a new modern complex which includes productions for storage, processing and burial of the waste products.

In the oil drilling sector and along the main transport pipeline, the most dangerous in terms of ecological consequences are accidents accompanied by the emission and spillage of large amounts of liquid, gaseous or

mixed hydrocarbon fractions, products of their processing, and accompanying ecologically harmful components.

In drilling oil and gas wells, the greatest danger is posed by open gushers with uncontrolled output of oil, gas and gas condensate.

In 1992 there were nine open gushers, and in 1993—ten.

Up until the present time, the losses from such accidents were determined by the enterprises which allowed them to happen. In this case, only the residual cost of the off-line equipment, the cost of rental of the equipment participating in liquidation of the gusher, and the wages of the workers participating in the liquidation effort are taken into consideration.

Losses of oil, gas and gas condensate, as well as the cost of necessary recultivation and cleanup of land and water basins contaminated by the oil and petroleum products, are not considered.

At enterprises of the oil and gas drilling sector, there is a continuing practice of introducing oil deposits into operation without provision of a system for collecting the accompanying natural gas. In 1990 the level of utilization comprised 80.5 percent, while in 1992 it declined to 79.6 percent.

In 1993-1995 there are plans to introduce another 120 deposits into operation without providing a system for collecting the accompanying natural gas.

The network of main oil and gas pipelines of Russia is around 200,000 km long and has over 5,000 intersections with various water barriers, presenting a potential danger for the ecology of the regions. In 1993, there were over 40 major accidents during the operation of pipeline transport, most of which were accompanied by significant ecological damage.

At enterprises of the metallurgical industry in 1992 there were 10 accidents (a two-time increase over 1991). In 1993 there were 12 accidents.

The ecological situation in the regions adjoining the enterprises of the metallurgical industry has become extremely aggravated. Construction of new high unit capacity facilities in 1970-1990, despite the insufficient development of questions of aspiration, ventilation and dust and gas purification, led to constant accidental emissions of considerable amounts of harmful substances into the atmosphere and the water reservoirs.

Thus, in 1986, due to the accidental emission of benzene from a storage facility of a resin distilling shop at the Cherepovets Metallurgical Combine, a large amount of this substance got into the Rybinskiy Water Reservoir, as a result of which the ecology of this reservoir suffered a great loss which has not been restored to the present day.

Considering the high saturation of metallurgical production with toxic and harmful substances such as chlorine, benzene, liquid ammonia, hydrogen chloride, hydrogen arsenide and others, disruptions of the technology take on a catastrophic character. The technology of utilizing lean sulphur-containing gasses from copper-nickel production is being introduced in the sector at a slow rate. Thus, the total output of sulphur dioxide from the metallurgical enterprises of Murmansk Oblast comprised 432,500 tonnes in 1992, and 81,600 from the Severonikel Combine.

The situation is analogous in the aluminum industry at the old electrolysis plants (90 percent of all capacities), where due to the absence of means of automation and mechanization there are constant "bath flare-ups," which are accompanied by the emission of toxic dust and gases (fluorides of magnesium, aluminum, sodium).

The status of accident prevention at enterprises producing thermal and electrical energy evokes great concern. Around 60 percent of the boiler equipment of TES [heat and power plants] (TET's) [Central Heat and Power Stations] has outlived its standard service life.

In 1993 on the network of railways of Russia there were 20 collisions and accidents, as compared with 12 in 1992. Collisions and accidents involving boxcars loaded with dangerous cargo occurred along the Moscow Railroad line—four cases, the Privolga line—three cases, twice along the Sverdlovsk, West Siberian and Far Eastern lines, and once each along the Oktyabrskiy, North Caucasus, Southeastern, Kuybyshev, South Urals, Krasnoyarsk, and Transbaykal Railroad lines. Also, there were 3,233 incidents, which exceeded last year's level by almost three times.

Along with the increase in the number of accidents and incidents, the severity of their consequences is becoming more serious.

Along the Volga Railroad Line, within the city limits of Saratov, after derailment and crash of the locomotive, five eight-axle tanker cars loaded with gasoline and four tanker cars loaded with ammonia, there was an explosion and subsequent fire. A residential house burned down and the railway span structure was destroyed. Fifty tonnes of ammonia leaked out of the damaged tanker car containers onto the surrounding environment. The population was evacuated from the nearby regions. The steam engine machinist was killed. It was only by sheer happenstance that no one else was injured. The loss from this accident comprised R235 million.

The most widespread safety violations are leaks in dangerous cargo along the railroad route—2,281 cases.

In reviewing the ecological danger of the Armed Forces, we should note the following basic potential events which led to the occurrence of accidents with strong ecologically unfavorable effects upon the surrounding environments: Accidents and catastrophes in the atomic

fleet, on nuclear-armed complexes, in warehouses of nuclear, chemical and missile weapons and conventional types of weapons, on transport communications associated with the shipment of ecologically hazardous objects, as well as major contaminations of territories and water basins with oil products, fires at warehouses and fuel and lubricant material storage facilities.

Over many decades of "ecological safety" in the Armed Forces, exceptionally acute ecological problems have accumulated, and continued inaction in solving them may also lead to the occurrence of emergency situations.

Here are some examples. There are around 40,000 tonnes of chemical weapons stored at seven arsenals of the Minoborona [Ministry of Defense]. Around 34,000 units of spent heat-emitting assemblies have been accumulated in the fleet. Of these, 11,000 are located on atomic submarines.

Since the start of operation of the Plesetsk and Kapustin Yar test sites, in the places where OChRN [not further expanded] fell, around 250 tonnes of heptyl were spilled, and there is over 20,000 tonnes of metal lying around. Altogether, over nine million hectares were set aside for the drop sites. In connection with the reduction of missile and anti-aircraft missile complexes, in PVO [anti-aircraft defense] alone there are 1,580 tonnes of excess fuel and 5,040 tonnes of oxidant which have accumulated at the warehouses. The annual turnover of petroleum products at military bases and warehouses reaches almost 10 million tonnes. Such an amount of utilized petroleum products leads to extensive pollution of the environment.

Thus, at the airport in the city of Engels alone (Privolga military district), there has been pollution with aviation kerosene over an area of up to 485 hectares, while the amount of petroleum products in the soil, ground and underground water exceeds 400,000 tonnes according to certain estimates. At the facilities of the Ministry of Defense, there are 3,000,000 tonnes of household and over 1,000,000 tonnes of industrial waste formed every year.

How to make an extraordinary situation ecologically safe?

The Russian System of Prevention and Action in Emergency Situations has been created, and the MChS of Russia is charged with its general administration. However, in accordance with the statute on the subsystem of "Ecological Security of the Russian Federation," developed by the Minpriroda of Russia, the administrative body of the subsystem is this department's Commission on Extraordinary Ecological Situations and Ecological Safety.

However, this statute on the subsystem, which has not been coordinated with the interested ministries and departments, and primarily with the MChS of Russia, is

in essence conceptual and does not define the mechanism for realization of its tasks.

It is quite obvious that the Minpriroda of Russia does not have sufficient manpower and means at its disposal, nor sufficient powers and authorities, to assume the functions of direct administration of the activity of segments of the subsystem of ecological security in a regimen of increased readiness and in an extraordinary regimen, as provided by the statute.

Evidently, the functions of Minpriroda must be limited to the standard, metrological and expert provision of ecological security, as well as to control over adherence to the standards of ecological security. Therefore, it is expedient to review the Statute on the Subsystem of the RSChS "Ecological Security" in accordance with the functions, tasks and capacities of the ministries and departments implementing activity in the sphere of ecological security.

The question of preventing and liquidating ecological consequences of accidents, and of coordinating the actions of ministries and departments at the federal and territorial levels must be reviewed within the framework of a unified plan for liquidation of accidents, as developed and realized by the MChS of Russia.

...And by What Forces and Means?

The decree of the Council of Ministers-Government of the Russian Federation dated 24 November 1993, No 1229, "On Development of a Unified State System of Ecological Monitoring (EG-SEM)," is the first step in creating an effective system to ensure the availability of reliable and comparable information on the status of the environment and providing for its maximal utilization. In case of occurrence of an emergency situation, the EGSEM functions as a subsystem of the RSChS.

However, in recent years the state systems of supervision and control over the condition of the environment (primarily Rosgidromet [Russian Federal Service on Hydrometeorology and Environmental Control]), due to insufficient budget financing, have been unable to ensure the effective study of environmental pollution caused by accidents. The network for monitoring pollution of surface waters on land and sea is being reduced. Observation programs are being cut back. The lack of funds makes it impossible to ensure the necessary degree of readiness for action in emergency situations associated with accidents at nuclear and radiation facilities.

Within the framework of the developing EGSEM, it is necessary to clearly develop the questions on the procedure for interaction of agencies of state control in cases of accidental dumping (emission) of pollutant substances and extremal pollution of the environment.

A considerable number of supervisory agencies has been created within the Russian Federation: For technical safety—Gosgortekhnadzor of Russia; for nuclear and

radiation safety—Gosatomnadzor of Russia; for ecological security—Minpriroda of Russia; for sanitary-epidemiological security—Goskomsanepidnadzor of Russia [RF State Committee for Sanitary-Epidemiological Oversight], and for fire safety—the fire prevention service of the MVD [Ministry of Internal Affairs] of Russia.

There are also a significant number of departmental inspections which fulfill the functions of state supervision. There are problems of interaction between a number of the state supervisory agencies, and duplication of activity of departmental supervisory services. The agencies of state supervision do not have sufficient powers and authorities, and the level of administrative penalties does not meet current requirements.

State supervision is not performed over many potentially dangerous facilities.

In connection with this, in the developed conception of the "State Policy of the Russian Federation in the Sphere of Industrial Safety, Protection of the Population and the Environment," an important section must be the one on "Improving State and Departmental Supervision."

The forces and means of liquidating emergency situations are relegated to various ministries and departments—from the Ministry of Defense to the appropriate services of the Ministry of Health, which does not facilitate the high effectiveness of their utilization.

We must note that the formulation of the RSChS is generally proceeding in a rather complex manner for a number of reasons, in connection with the process of formulating departmental and functional subsystems, and reorganization of federal agencies of executive power. There is a need for preparation of a new edition of the Statute on the RSChS, which takes into consideration the new structure of executive power and stipulates the functional tasks of the subsystems.

The primary reason which today reduces the effectiveness of functioning of the RSChS, especially in terms of implementing specific measures for liquidation of emergency situations, is the difficult economic situation in the country.

The practically total absence of funds for equipment and re-tooling with current technology and means of protection, the considerable wear of the pool of emergency-rescue and emergency-restorative mechanisms and transport means reduce the effectiveness of reacting to emergency situations.

The procedure of financing measures for liquidation of emergency situations and their consequences defined by the decree of the Government of the Russian Federation dated 4 November 1993, No 1128, does not make it possible to effectively utilize financial means for the organization of emergency-rescue and emergency-restorative operations.

The provision of ecological security is significantly complicated by the curtailment of program operations providing for the implementation of preventative measures—one of the most promising forms of safety provision for the population, as well as for the territories and facilities.

High Tariffs on Imported Ecological Equipment Critiqued

94WN0368A Moscow IZVESTIYA in Russian 3 Aug 94 p 5

[Article by Marat Zubko, IZVESTIYA staff: "Russian Customs Thwarts Western Environmental Aid"]

[Text] Helsinki—The system of Russian duties on imported equipment may result in the fact that the implementation of a whole series of international programs related to environmental protection in Russia may be undermined totally or held up for a long time. That is the opinion of [Sirpa Pietikaynen,] Finland's minister of the environment.

The situation for the Finns, judging from his speech, appears extremely strange. Russia is seemingly interested in having other states help it get out of the "ecological black hole" into which it found itself over the long years of the Soviet regime. Its neighbors are undertaking substantial expenses in order that the air and soil in our country, our rivers and lakes, and the seas washing our shores be polluted less. But Russian customs is establishing huge taxes on the importation of equipment for treatment and other installations.

"One-quarter or even one-third of the money that we are allocating for environmental projects in Russia, [Sirpa Pietikaynen] stated, "is going for customs duties and other taxes. This reduces the capital investments. One cannot think that the donor countries will increase their allocations in accordance with the increase in duties. For that reason some programs may simply be halted."

It is totally incomprehensible why customs duties should be collected on equipment for building environmental protection facilities. Can it be that it is in order to protect our own capital investments in environmental programs? Then why can't we carry them out without help from outside?

Among the first projects that the clumsy Russian tax policy may affect, the Finnish press cites the construction of a plant to recycle waste in Petersburg and the construction of sewage-treatment facilities. Both facilities have to do with the purity of the Gulf of Finland, and therefore increased attention is being given to them in Suomi.

The minister expressed the conviction that a period of rapid economic development is coming in Russia, but it may come up against unsolved environmental problems.

Yet the Russian authorities are holding up foreign capital investments in environmental protection projects through the unwarranted increasing of customs duties.

Something that is clearly wrong has been incorporated in the instructions that Russia's customs agents are using.

Country's Ecological Situation Viewed

94WJ0353A Moscow SEGODNYA in Russian
21 Jul 94 p 9

[Article by Fedor Orlov under the heading "In Vivo": "Positive Public Health Situation Absent in Russia, Despite Existence of Law"]

[Text] Samples taken from centralized water supplies indicate that 20.4 percent of those sources do not meet chemical standards, and 11.2 percent fail bacteriological criteria.

Forty million people live in areas where the level of air pollution "periodically" exceeds 10 times the maximum permissible concentration.

Only 28 percent of wastes are reused.

Only 14 percent of Russia's children are "essentially healthy."

Seventeen percent of all working people work under unhealthy conditions.

There are 36.9 million people reported to be suffering from infectious diseases, or 4.0 million more than last year. More than 10,000 people have died.

"Manageable" infections, those for which there exist preventive vaccines, are becoming increasingly unmanageable: the incidence of measles and diphtheria has increased by a factor of four, and the rate of whooping cough is up by 63 percent.

The "social diseases" are also advancing: the incidence of tuberculosis among adults has increased by 25 percent and among children by 18 percent. The syphilis rate is up by a factor of 2.6, and the number of cases of gonorrhea is up by 37.4 percent.

For the first time the draft report from the Russian Federation State Committee for Sanitary and Epidemiological Oversight has received the status of a national report. That fact alone, plus its complete accessibility, something particularly notable against the traditional backdrop of media insulation from medical statistics, could create some sense of satisfaction among those who read it. Nothing else about it is heartening, even though the negative trend in a majority of its points was quite predictable. Just as was its interpretation of events with reference to the country's current socioeconomic condition and more specific factors—from the rising prices of bathhouse use, laundry services and detergents to the decline in public morals.

Of course, it would be pointless to demand a precise statistical breakdown of the latter point. As for the socioeconomic roots of the worsening public health situation, we would like to know about them in greater detail and with more specifics. The authors of the report insist most emphatically that a correlation does in fact exist. Vladimir Chiburayev, head of the Sanitary and Epidemiological Oversight department that prepared most of the document, cites among the main reasons for this the failure to carry out the overwhelming majority of measures connected with water supply and sewer system development, an inadequate amount of repair work, and incomplete funding of the public health service itself. It is only natural that the latter point is of great concern to the committee staff, and it is probably for that reason that the shortfall in that regard was pinpointed most precisely, i.e. 50 percent of the required amount.

However, in comparison to prevailing conditions the State Committee for Sanitary and Epidemiological Oversight is not doing all that badly. It has managed to get funding for five of its federal programs. Vladimir Chiburayev claims that no other agency can compare with his committee in terms of the number of programs approved, despite the lobbying opportunities that some of them have.

It appears that interdepartmental competition, lobbying and division of functions are very timely topics for the State Committee for Sanitary and Epidemiological Oversight. Naturally it has no doubt about the correctness of its own existence as an independent structure. In any event, the committee prefers the establishment of a partnership-based interaction with the Ministry of Health and the Medical Industry to discussions of any possible advantages of becoming a part of that ministry. With regard to other agencies, or more precisely with regard to their tactics, feelings vary. For example, regarding the Ministry of Environmental Protection and Natural Resources, Vladimir Chiburayev commented that "I would be lying if I were to say that we are not engaged in a tug-of-war." The State Committee for Standards hits a much more sensitive nerve with the State Committee for Sanitary and Epidemiological Oversight. For instance, the product certification practices employed by it are described as "unworkable." In the opinion of one department head within the State Committee for Sanitary and Epidemiological Oversight, those practices are the result of the aforementioned lobbying efforts. Furthermore, the State Committee for Standards has stuck public health officials with the whole job of assessing whether products meet sanitary standards, while itself being "brave" enough to guarantee consumers safe products. Naturally the question of who is going to issue the certification on those products is now an issue of vital importance to officials, if not to consumers.

It is clear that any resolution of interdepartmental friction would hardly be worthy of public notice if the stability of the social situation were guaranteed regardless of the outcome. For example, American taxpayers

are supremely indifferent as to whether the famed Food and Drug Administration is part of their country's ministry of health or not. All they want to know is that that administration is reliably protecting their safety. In our country we are quite seriously discussing the need to establish armed public health units, and at the same time and with the same serious expression on our faces talking about how the rate of disease is not in keeping with the standards that exist for developed countries. On the other hand, the tendency to portray our country as a banana republic without bananas, where even lectures on hand washing would be a lifesaving revelation is also clearly an exaggeration. No amount of statistics and no projections, even the most alarming, would do more to promote a stronger public health service than its actual effectiveness would. And nothing can do more to reinforce the status of the institution responsible for public health than its real level of capabilities.

Thus far those capabilities are rather modest. Vladimir Chiburayev commented that only a few tens of laboratories could by any stretch of the imagination be considered up to the international GLP standard. And thus far the 88 oblast sanitary and epidemiological centers have only submitted reports of 12 regional programs with local budget funding. That information may be incomplete, but it clearly indicates that in the near future the topic will not be the positive public health standard proclaimed by law, but rather the absence thereof.

BELARUS

Scientists Refute IAEA's Studies on Radioactive Fallout

WS0308092794 Minsk Radio Minsk Network
in Belarusian 0300 GMT 3 Aug 94

[Text] At an environmental seminar, scientists from the Belarusian Academy of Sciences Forestry Institute have released a sensational statement. They have refuted the results of previous studies concerning forestry contamination after the Chernobyl disaster, which were conducted by their colleagues from the International Atomic Energy Agency [IAEA] and other foreign institutes. According to our specialists, the environmental situation in forests in Belarus, Ukraine, and Russia, which were contaminated by nuclear fallout, is more complicated and dangerous than their foreign colleagues assessed.

KAZAKHSTAN

Premier Denies Uranium Being Sold 'Secretly' to Third World Countries

LD2807163294 Moscow Russian Television Network
in Russian 1200 GMT 28 Jul 94

[Report over video by correspondent A. Kondrashov; from the "Vesti" newscast]

[Text] Announcer Aleksandr Sapozhnikov: IAEA Director General Hans Blix visited the Semipalatinsk testing ground today. Yesterday he said that the IAEA inspection at the site showed that the radiation background level was normal, though the Kazakh side disagreed on this.

Kondrashov: [Video shows Physics Institute and Blix meeting, news conference] Following the collapse of the Soviet Union, Kazakhstan was one of the four states on its territory upon which the West fixed its attention because of its nuclear potential. In addition to the missiles, on withdrawal of which a legal settlement has been reached with Russia and the United States, Kazakhstan also has five nuclear reactors. Kazakhstan's signature on the Treaty on Nonproliferation of Nuclear Weapons was not a factor in the political ambitions of Kazakhstan's leaders, and today the situation regarding the nuclear installations here does not give rise to any particular concern on our part, said IAEA Director General Hans Blix, who is in Alma Ata [Almaty] on an official visit.

After closed-door talks, the IAEA head and Kazakhstan's prime minister signed a treaty accord on guarantees. The document essentially specifies Kazakhstan's previous purely declaratory rights and duties regarding its nuclear activities. Among other things, the republic accepts in new aspects all the conditions of the IAEA monitoring system and submits to the quota principle of trading in uranium on the world market.

At a news conference, Kazakhstan's Prime Minister Sergey Tereshchenko resolutely denied reports that Kazakhstani uranium is being sold secretly to Third World countries.

LATVIA

Poison Gas, Contamination Found at Former Soviet Military Site

WS0308134594 Riga DIENA in Latvian 25 Jul 94 p 1

[Report by Egils Zirnis: "Poisonous Military Substances Threaten Lake Dunezers"]

[Text] Riga, 22 Jul—Several barrels with the Russian inscriptions "Chloropicrin-99—Poison—Deadly" were found by National Guard units on 20 July in the village of Adazi, 25 meters from Lake Dunezers, on the premises of the former "Vecvarnas" hunting lodge of the Baltic Military District. The site has been taken over by the "Adazi" joint stock company. One barrel had a hole capped with a wooden plug. There was a pungent odor hanging in the air. National Guard Division Commander Gerbasevski dropped some liquid on his shoe by accident. As a result, a hole formed in the shoe and he developed a blister on his foot.

"In this case, Government Decision No. 221 concerning the order of transferring military facilities has been

violated, because a study of environmental conditions had not been conducted. This is not the first instance of a Russian military facility being handed over without an appropriate study of environmental conditions. Therefore, the local authorities in Adazi are to be completely blamed for the consequences of the incorrect transfer. Chloropicrin is a poisonous military substance—an asphyxiating gas," DIENA was told by Andrejs Laskovs, chairman of the Riga Regional Environment Protection Committee. The committee will report to the district prosecutor's office. In spring, dead fish and invertebrates were found in Lake Dunezers. Therefore, it cannot be ruled out that these substances had already seeped into the lake by that time. In the past, the lake was used for recreation by high-level Russian Army officers, and presently it is being used by inhabitants of Adazi and Riga.

UKRAINE

Isotopes Found at Chernobyl Deemed 'Likely' To Trigger Nuclear Blast

LD0408225894 Kiev Radio Ukraine World Service in English 2100 GMT 4 Aug 94

[Text] As UKRINFORM learned on Thursday, 4 August, lethal americium 241 and 242 isotopes have been detected in the Chernobyl nukes [as heard] 30-km belt, which is said to cause biological mutation and diseases in living organisms. As experts fear, the lethal radioactive isotopes are likely to trigger a nuclear blast at the Chernobyl nuclear power plant.

Official Says Quality of Drinking Water Has 'Deteriorated Considerably'

LD0508104494 Moscow Radio Rossii Network in Russian 0700 GMT 5 Aug 94

[Text] An alarming sanitary-epidemic situation has developed in Ukraine. In particular, according to Ukrainian Health Minister Vladimir Maltsev, the quality of drinking water has deteriorated considerably throughout the republic. According to a Ukrinform report, one in four or five test samples in Vinnitsa, Khmel'nitskiy, and Chernovitsy oblasts does not conform to the standards of bacteriological pollution.

Further on Report of Contamination Found Near Chernobyl

LD0508110194 Moscow ITAR-TASS in English 0822 GMT 5 Aug 94

[By UKRINFORM correspondent Yelena Alikhanyan for TASS]

[Text] Kiev August 5 (TASS)—An extremely dangerous radioactive substance, americium-241, has been detected near the Chernobyl nuclear power station and in Ukrainian capital Kiev.

According to Viktor Sedletsky, president of the association of independent scientists of Ukraine, americium is highly poisonous and its period of semi-decay is approximately 430 years. The element which results from the decay of plutonium is easily dissolvable in water and migrates with it.

This element was discovered not only in the Chernobyl zone but also in Kiev. According to Sedletsky, the amount discovered was surprisingly great. He thinks this can be accounted for to inaccurate data about the amount of nuclear fuel discharged into the environment during the Chernobyl blast in 1986.

Some media reports alleged that the scientists also reported the presence of americium-242 in the area, but Sedletsky rejected the allegations. He recalled that that chemical element's life is no longer than 16 hours but its critical mass is so low that it can explode even when its quantity is negligible.

Some specialists say that the sarcophagus around the ill-fated Chernobyl reactor is crumbling exactly because of such micro-explosions of americium-242 which is accumulating in the cement.

According to Viktor Sedletsky, the state of the sarcophagus was critical even before the appearance of americium.

Another scientists, expert of the Ukrainian inter-departmental radiation control commission Yuri Solomatin blasted reports about americium as "artificial fostering of Chernobyl masochism." He said it is "irresponsible to give Ukrainian people yet another unjustified psychological trauma without first researching the problem which is known mainly from hearsay."

Environment Minister Defends Chernobyl's Continued Use

LD3007132294 Kiev Radio Ukraine World Service in Ukrainian 1900 GMT 29 Jul 94

[Text] In regarding the problem of Chernobyl today, mainly from the standpoint of two RBMK generating sets operating at the Chernobyl nuclear power plant, Western countries take an erroneous position. This is the opinion of Ukrainian Environmental Protection Minister Yuriy Kostenko. Even if they do cease to exist, it will not remove the nuclear threat overhanging Ukraine, he told a gathering of journalists.

What safety can there be, the minister pointed out, when Ukraine is literally surrounded by the very same generating sets. For example, Russia's Kursk nuclear power plant, that operates the notorious RBMKs, is only 60 kilometers away from the Ukrainian border. Besides Chernobyl, a total of 13 other RBMK reactors are now in operation elsewhere in the world. Although the issue of them is not on the agenda now, it will acquire an increasingly greater topicality with every passing year.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

It is unreasonable to pluck out a part of the whole, rather than taking all of it into consideration, as this approach, Yuriy Kostenko believes, will not resolve the problem of nuclear safety.

Chernobyl 'Emergency' Under Investigation

MM0208124394 Moscow ROSSIYSKAYA GAZETA
in Russian 2 Aug 94 First Edition p 1

[Report from ITAR-TASS/ATN (Daily) roundup column: "Engineer's Mistake"]

[Text] A nonestablished member of the service personnel of Chernobyl Nuclear Electric Power Station's second turbogenerator mistakenly switched off his emergency installation [avariynaya ustanovka].

The radiation background did not change. A special commission is investigating the causes of the emergency.

Moroz, Masol Resolve To Keep Chernobyl Open

AU2907171094 Kiev DEMOKRATYCHNA UKRAYINA
in Ukrainian 28 Jul 94 pp 1, 3

[Unattributed report from Chernobyl Nuclear Power Station and Kiev: "Plants Should Not Be Shut Like Doors"]

[Excerpt] [Passage omitted on history of Chernobyl accident] The people dealt with the affliction, and the station began to function again. At present, Chernobyl produces enough electricity for Kiev and Chernihiv.

However, the Chernobyl problem has not been removed from the agenda. What to do with the sarcophagus and should the functioning units be closed down or continue to be used? These questions are constantly on the agenda. Not only specialists are working on them. Many politicians are making a career "on the theme." Some people are taking advantage of the Chernobyl disaster for their own purposes.

"Meanwhile," says V.D. Synko, chairman of the Kiev Oblast Council of People's Deputies, "the Chernobyl disaster is changing its dimensions from worldwide to oblast. Immediately after the accident, everybody tried to help in overcoming the calamity. At present, there is much talk, but little work. In order to do everything properly and efficiently, the Supreme Council and the government must take a clear stand on the issue. They must outline their policy and follow it consistently. That is why we invited Supreme Council Chairman O.O. Moroz and Prime Minister V.A. Masol to Chernobyl."

Such a meeting took place at the office of the station's administration, with unit-type control panels, and in the rooms occupied by the reactor and the engine. An explanation was given by S.K. Parashyn, general director of the Production Association "ChAES" [Chernobyl Nuclear Power Station].

his position:

Ten of the 16 power units with RBMK reactors are in use in the Dnieper basin. If one proceeds from the theory that the 1986 accident may recur, the closing down of the Chernobyl station alone is not a way out of the situation. The specialists realize this. That is why nobody even raises the question of closing down the nuclear power stations in Russia or the Baltic states. They will be rebuilt.

We are also improving our station's safe operation. What happened in 1986 cannot happen again. Two IAEA commissions have visited the station, but they did not find any technical reasons to close it down. However, the politicians think differently.

"The facility needs to be rebuilt, not closed down," emphasized the director. "This will cost \$600 million. After that, electricity worth \$12 billion will be produced."

"The expense of rebuilding three units is equivalent to the capital required for the construction of half a new unit," added Chairman of the State Committee for Nuclear Power M.P. Umanets. "Make your own conclusions on which is more expedient."

Ukrainian Prime Minister V.A. Masol stated that an immediate closure of the station is out of the question. In many respects, the resolution of this question depends upon the operating personnel. If they work properly and without accidents, there will be no cause for alarm.

"When I took up this post, I was aware of the distressing situation in the economy," said V.A. Masol. "However, I did not know that it was so bad. Winter is near at hand. There is a shortage of energy resources. We will not be able to survive without nuclear power. Of course, we also understand the concern of the world community. We are ready to cooperate with all those who will help us overcome the consequences of the accident."

The conversation was summed up by chairman of the Supreme Council O.O. Moroz.

"The Chernobyl problem has several levels," he said. "Worldwide and internal in Ukraine, for the workforce of the station, and for each individual. Everything outside Ukraine is politics. Our life is in the state. Wherever I am, I am always confronted with the issue of Chernobyl. I say everywhere that we want to and will close down the plant. However, we do not have enough funds for it. If we shut it, like doors, we will ultimately destroy the economy and will generate a new disaster. Foreign states only promise assistance, but nobody is giving us any money. I believe, therefore, that the Supreme Council will not agree to closing down the plant. It must be rebuilt. The people working there must see what is in store."

"I want to reiterate: The elimination of the consequences of the accident is a problem, and not for Ukraine alone. We are ready to cooperate with everybody who will help us, not in words, but in deeds." [passage omitted]

Chernobyl Management Working To Retain Personnel

MM2707083194 Moscow Russian Television Network in Russian 1900 GMT 19 Jul 94

[From the "Vesti" newscast: Video report from Chernobyl nuclear power station by Ye. Petrova, identified by caption; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [190514] [Petrova over video of Chernobyl nuclear power station control room] Is it necessary to close down the Chernobyl nuclear power station?

Specialists claim that at present the station is as safe as the Kursk, Smolensk, or Ignalina nuclear power stations where the same type of reactors are used. They are backed up by scientists. The shutdown and cooling of the power units would take a long time and would result in a loss of at least 13 percent of the current Ukrainian electricity output.

Furthermore, the money offered by the West is not sufficient to fund the closure of the station and the simultaneous construction of new power units which will not damage the environment. At the same time the staffing problem may grow more acute. In conditions of a constant threat of closure, the new management of the Chernobyl nuclear power station is doing its utmost to stop highly qualified staff from leaving, expending a lot of effort and money to provide them with social guarantees. Nonetheless, the debate around Chernobyl is not subsiding. Let's hope that Chernobyl will not become the latest pawn in the political game. [190612] [video shows control room and production facilities, brief street scene]

Moroz, Masol Oppose Closure of Chernobyl

LD2507200194 Moscow INTERFAX in English 1755 GMT 25 Jul 94

[Text] The Chernobyl nuclear power plant must go on working, Ukrainian parliament Speaker Oleksandr Moroz told a press conference on Monday after a visit to the Chernobyl plant. He expressed confidence that the Ukrainian parliament would also oppose the plans for closing it down.

He said that the government must finance the modernization of the second unit and the reconstruction of the first one. The third unit must be switched to a safe mode of operation and put into service, he said.

Politically, the Chernobyl nuclear power plant must be closed down, but the world community must allocate money for doing so and for compensating for the loss of energy, he said.

He stated that during his visits to Moscow and Washington his position would not change.

Ukrainian Prime Minister Vitaliy Masol also opposes plans for closing the Chernobyl plant. He said that in 1994 it is to generate 208 kilowatt hours [as received] of electric energy.

It may be closed down only after a feasibility study is carried out, he said. "My position coincides with the position of the Ukrainian president," he added.

Director-General of the Chernobyl nuclear power plant Sergey Parashin told the press conference that \$600 million were needed to make the operation of the plant safe.

Plebiscite Indicates 90 Percent Oppose Building New Unit at Zaporozhye

LD2507201194 Kiev UNIAN in Ukrainian 1440 GMT 25 Jul 94

[Text] Dnepropetrovsk Oblast—The Council of People's Deputies in the town of Marganets held a plebiscite, concurrent with the elections to the Supreme Council, on the launch of the sixth generating set at Zaporozhye nuclear power plant.

According to the town council chairman, Oleh Bidnyak, some 90 percent of those polled gave a negative reply to the question "Do you agree to the launch of the sixth generating set at Zaporozhye nuclear plant prior to the adoption of a law on the status of residents within 30 km of nuclear power plants?"

Marganets is situated 6 km from the nuclear plant, which is set to become the biggest in Europe after the launch of the sixth generating set. The same poll was held in Nikopol, Dnepropetrovsk oblast, and Kamenets-Dneprovskiy, Zaporozhye oblast, where the majority said "no" in reply to a similar question.

FRANCE

Ministries Allow 'Troubled' Superphenix Reactor To Restart

AU0308083294 Paris AFP in English 0711 GMT
3 Aug 94

[Text] Paris, Aug 3 (AFP)—France's troubled Superphenix fast-breeder nuclear reactor at Creys-Malville was formally given permission to start up again on Wednesday [3 August] by the Ministries of Industry and the Environment.

The ministries said in a statement that the 1,300-megawatt reactor in southeastern France, which has been closed since July 1990, would be started up in stages, operating at three percent, 30 percent and 60 percent capacity before reaching its full capacity in around five months.

The plant's deputy director, Andre Lacroix, said he had not received official notification but welcomed the news, saying the plant could be started up as early as Sunday [7 August].

The Superphenix project, launched 20 years ago and presented as the great hope of French industry, has been dogged by problems since the outset. The reactor has suffered a dozen breakdowns and two long stoppages, meaning that it has only functioned at full capacity for six months since building began 17 years ago.

The last stoppage was ordered after sodium, which ensures the transfer of the heat from the reactor's core to the steam generators, oxydized. The incident was blamed on poor maintenance.

The reactor is being allowed to restart as a prototype and will no longer be specifically intended to supply electricity to the national grid.

Environment Minister Comments on Restart of Superphenix

LD0308173394 Paris France-Inter Radio Network
in French 1600 GMT 3 Aug 94

[Excerpts] Superphenix is going back into service. The nuclear reactor at Creys-Malville will be able to restart before the end of the week. The final go ahead was given by the government this morning, after four years during which the installations were closed down. However, this time, the Superphenix will no longer be used specifically to supply electricity to the EDF [French Electricity] grid.

The reactor is being turned into a prototype, with the aim of acquiring new knowledge in the nuclear field. The relaunching of Superphenix has not received unanimous support. The ecologists are opposed to it. In the opinion of [former Environment Minister] Brice Lalonde, for example, this decision shows a lack of courage on the part of the government.

Environment Minister Michel Barnier responds to this point: [Begin recording]

Barnier: Lack of courage was certainly shown for several years by people who were hiding their heads in the sand like ostriches. [passage omitted]

I would like to point out that there are 57 nuclear reactors working in France, which France needs. They are producing waste plutonium, dozens of tonnes of plutonium per year, and we need to tackle this question of nuclear waste. So, I repeat, it is not for a government to hide its head in the sand and behave as if problems do not exist or to indulge in demagogy.

We decided—and it is a good decision for the environment—that Superphenix would no longer be a nuclear power plant and that the fast breeder reactor would be closed down within two years, thus in the very short term. Everything that has been produced at Creys-Malville should be used to carry out research and experiments, particularly into the question of waste. [end recording]

French Consortium Wins Bid To Conduct Feasibility Study on Chernobyl

BR2807152994 Paris LE FIGARO (LE FIG-ECO
Supplement) in French 28 Jul 94 p III

[Unattributed report: "French Firms To Carry Out Chernobyl Dismantling Feasibility Study"]

[Text] The "Alliance" consortium, which is led by Campenon-Bernard-SGE and includes French groups Bouygues and SGN [expansion not given], has won the call for bids issued by the European Commission with respect to a feasibility study regarding the confinement shell for the Chernobyl nuclear plant, Campenon-Bernard-SGE has announced. Worth ECU3 million (about 20 million French francs), the study will focus on the reinforcement of the existing shell around reactor number four, the one which caused the nuclear disaster of 26 April 1986, as well as the construction of a new confinement shell. The "Alliance" consortium was chosen over another consortium which included German groups Hochtief (BTP) and Noell (nuclear sector).

Transport, Environment Ministries Receive Budget Increase

BR2807071394 Paris LA TRIBUNE DESFOSES
in French 27 Jul 94 p 4

[Unattributed report: "Ministries Hit by Cuts Lie Low as Others Rejoice"]

[Text] Responding yesterday to questions by LA TRIBUNE DESFOSES' editorial staff, ministries fall into two main categories: The talkative ones, which have generally seen a quite generous rise in their credits, and the rest. Among the ministries reluctant to make much of

a statement are Housing, which, as we know, has been forced to take severe spending cuts, Labor, Research, and Industry. Some of these are possibly still expecting the budgetary rigor that has been imposed on them to be relaxed slightly.

Research: Suspense...

The Research Ministry had little to say yesterday. Given the relative reluctance of [Research Minister] Francois Fillon's staff to give an outline of its budget, to the point of saying that "it had not received notification of the spending ceiling..." we can fear the worst. Despite Francois Fillon's repeated assurances that [Prime Minister] Edouard Balladur had said that research would "remain a priority budget," he did not escape the axe. It remains to be seen what is left from a total budget of some 52 billion French francs [Fr]. The proportions were still being negotiated bitterly yesterday evening.

This brings back unhappy memories for the scientific community, who saw its civilian research budget take a 7-percent cut during the previous period of cohabitation. Scarcely had the Chirac government taken office [in March 1986], than it cut off some Fr4.5 billion.

Industry Forced To Make Savings

The Industry Ministry had little to say for itself, either. Ministry officials could only say that they were preparing for a very realistic and very reasonable budget and that, as a result, there had been no "very great pressure" from the prime minister's office. It was pointed out that this is a vast ministry that not only covers industry, but also telecommunications, foreign trade, and some research. Overall, some Fr2 billion is to be saved on an overall Fr45-billion budget, including foreign trade.

Equipment Ministry: Treated Well

The global budget of the Equipment, Transport, and Tourism Ministry received relatively good treatment by the Budget Ministry. It should rise by 2.5 percent in 1995 over 1994, when it was worth Fr80 billion. The government therefore appears to have decided to continue its efforts to favor transport infrastructures. The Housing Ministry appears to be in a rather less comfortable position.

Star Award for Environment Ministry

The "little budget" of the Environment Ministry is one of the few to have been upped by five percent. It will rise from Fr1.593 billion in 1994 to Fr1.612 billion in 1995, excluding the research budget assigned to other ministries (Research, Industry, and Transport). At the same time, the environmental protection department has had its staff numbers increased by 0.9 percent.

This means that 20 new employees will be taken on to swell the existing 2,300-strong workforce, especially in the regions, with priority being given this year to the

prevention of natural risks. In addition, the Environment Ministry will also see its resources increased through fiscal and para-fiscal measures in the framework of the subsidies assigned to the water and waste policy agencies.

GERMANY

'Alleged' Nuclear Dealer 'Negotiating' With Government

AU0108135394 Hamburg DER SPIEGEL in German
1 Aug 94 pp 61-63

[Unattributed report: "Hungry Wolves"]

[Text] Alleged nuclear dealer Adolf Jaekle is negotiating with the Chancellor's Office. He is ready to disclose where nuclear material is hidden if he is granted better prison conditions.

Experts from five countries met in the Federal Office of Criminal Investigation [BKA] in Wiesbaden two weeks ago to discuss the threat by international mobsters, under the dull title "Working Meeting on Organized Crime." In the early afternoon of 20 July, three of the gentlemen withdrew into a back room for a chat. What they were discussing was a shocking crime story and the danger of a nuclear apocalypse.

Detective Peter Kroemer, specialist on all types of nuclear matters in the BKA, lawyer Gerhard Baetz from Rheinstetten in Baden-Wuerttemberg, and Bernd Schmidbauer, coordinator of the intelligence services in the Chancellor's Office, had just introduced themselves to one another, when Minister of State Schmidbauer had a great idea. He asked the BKA expert to connect him with the lawyer's client, a certain Adolf Jaekle, who is currently serving a term in Erding Prison.

Jaekle was the man on whom the experts had had a heated debate at the sidelines of their meeting. In the garage of the businessman from Tengen-Wiechs in southern Baden, plutonium 239—the stuff for the bomb—had been found for the first time in May this year. Intelligence services throughout the world are now interested in the people behind him, but Jaekle has been reluctant to supply information. A difficult case—very much to the liking of Schmidbauer, who is known for wanting to have a finger in every pie.

Intelligence people have warned for years that weapons-grade nuclear material would eventually appear somewhere illegally. Now this day X has come, and as always in big cases, chaos is the only reliable quantity. In addition to the Chancellor's Office, several authorities are involved—German and others, ranging from the FBI to Interpol. The confusion is considerable.

Meanwhile, Jaekle is trying to make a barter deal with the Chancellor's Office. For special privileges in prison, he is ready to testify and disclose additional places where nuclear material is hidden.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

However, it took Minister of State Schmidbauer quite a while to get a telephone connection with Jaekle. It is true that BKA detective Kroemer told the Bavarian prison officials that Mr. Schmidbauer wanted to talk with the arrested Jaekle quickly. But many people in Bavaria are called Schmidbauer, and there are at least six persons of this name, with a "d" and with a "dt," in Erdingen. Only after several checkbacks of the prison officials was the prisoner taken out of his cell and allowed to telephone.

A talk among the experts began. The skilled motor mechanic Jaekle, 52, and the former physics teacher Schmidbauer talked about fissionable material, actinometry, and other devilish stuff. Schmidbauer, whom the BKA had only recently honored with the title "State Security Owl for Night Watchers," hissed through his teeth: "This man knows what he is talking about."

Then the Bonn superagent asked about the origin of the plutonium. Jaekle assured him that he would sing on suppliers and supply routes in due time. He even gave it to the minister of state in writing.

The chancellor's envoy already got a "chocolate" (Jaekle) in advance. Jaekle said that in his office in Gottmadingen, under the staircase on the right-hand side, there were 10 containers with a mysterious mercury mixture. The crisis management started promptly.

A helicopter with four experts on board took off, and the public prosecutor also left for Gottmadingen. By 0700 P.M., the operation was terminated, with officials reporting that it had been unproductive. Other detectives had been faster and had long since secured the containers—of absolutely harmless material.

Public Prosecutor Goetz Walter, 38, from Constance, who is in charge of the Jaekle case (file no. 11 Js 172/94), reacted with annoyance. "Your contact partner is not the Federal Chancellor's Office," the prosecutor told Jaekle's lawyer, Baetz. Thanks to Schmidbauer, Baetz could tell him, however, that "the federal chancellor has personally taken the matter into his hands."

There is no higher authority. An official of the Land Office of Criminal Investigation in Stuttgart complains about such "interference from the top." Schmidbauer even gave Baetz a recommendation from the government: The minister wrote on 21 July that the lawyer was working "on an important matter for the federal authorities."

While the Chancellor's Office dupes the investigation authorities, it also becomes clear that the solidarity of which there is so much talk at international meetings consists only of empty words when it comes to jointly combating the nuclear mafia.

According to an analysis of the European Transuranium Institute in Karlsruhe, "Find 13," as Jaekle's plutonium is internally called, comes from the Russian military nuclear complex. BKA main departmental head Leopold Schuster said that so far, there was "no reason" "to

doubt" the origin of the material. Schmidbauer is equally certain: "It must be from Russia."

The Russians see this quite differently. They are trying to calm people down: "There has never been such a type of theft," says Interior Minister Viktor Yerin. "By arguing that one has to protect one's own agents," German investigators are withholding important information, says Kirill Sidorov, departmental head of the Russian intelligence service.

The Americans are also only conditionally operational. At a U.S. hearing recently, Senator Sam Nunn warned about the "threat to international security" by nuclear smugglers. Big words, small gestures: It is true that an FBI office in Moscow is supposed to be fighting the exporters of death jointly with the Russians, but in the case of Jaekle, this will not bring about much. The first U.S. resident is being expected in the Russian capital in January 1995. He does not know the language.

The development has caught the prosecution authorities worldwide unprepared. BKA President Hans-Ludwig Zachert saw less than two years ago that the police are "inexperienced, unskilled, and awkward" in reacting to the new type of crime. In the autumn of 1992, he deplored the lack of protective suits and transport containers for nuclear junk.

Today, more is at stake. Terrorists and despots can threaten nuclear war. The vacuum that the communist world revolution has left could be filled with a self-made nuclear explosive by the world revolution of crime.

At their meeting in Wiesbaden, the experts already used the terms "before Tengen" and "after Tengen," just as we speak about "before the change" and "after the change."

Jaekle wrote on a slip of paper in his cell on 28 July that the "point of no return" has come. The businessman is playing with a high ante, a very high ante.

Sometimes he stresses in a statesmanlike way "that it is in the national as well as in my own interest to clear up the case." He seems to remember very clearly who the dealers in the wild east are. However, when asked about details, Jaekle covers up the extent of his deal and makes vague indications—nothing else.

"The plutonium is my trump card," says Jaekle. He calls for better prison conditions, possibly even his release. He talked about this topic with Schmidbauer. "OO8," as the minister of state is also called, showed understanding.

Investigating prosecutor Walter says that Jaekle is a "complex man." People who have talked with him describe the dealer as a "wide-awake character with an inclination to melancholy."

Jaekle let the investigators know through emissaries of the Chancellor's Office that he has information about "another plutonium deposit." In addition, he said that highly enriched uranium has been hidden in Austria and

Germany. Moreover, plutonium reached the Federal Republic through countries other than the former East Bloc. Nor was the trade with nuclear material functioning as had been supposed. Jaekle said he even knew the addresses of buyers.

The stuff that was found with him is not particularly threatening because it is a very small quantity; six grams is not nearly enough for a bomb. However, the prosecutors are quite sure that this is just a bait for potential buyers.

According to chief investigator Schmidbauer, this is a "test quantity." "If it is possible to smuggle such material into our country, then we must assume that there could be more material deposited somewhere."

Jaekle announced that, eventually, he might talk about another quantity of at least 60 grams of plutonium. He said the stuff was deposited in Switzerland. "We are following every trace," Peter Lehmann of the Bern Federal Prosecutors' Office says. Apartments, business establishments, and warehouses of Jaekle's partners were searched, but the investigations have proved tough and extremely difficult.

The Land Office of Criminal Investigations in Stuttgart and the public prosecutors in Constance are persistently trying to connect circumstantial evidence and facts. If the knots hold they will become a network. The investigators have fed their police computer with 3,500 names, data, and addresses.

Most of the material comes from two green notebooks found with Jaekle, and two plastic card indexes and a directory.

A search for traces in a labyrinth: Jaekle had connections around the globe. Arab and Far Eastern names and firms have appeared. He has connections with Eastern Europe. Jaekle sat at a table with scientists and staff members of Russian nuclear companies and military officials. He was also doing business in Germany.

A world full of dangers, because this branch is marked by rough practices. Jaekle told investigators about assassination threats against him and asked for personal protection. However, he did not always treat his contracting partners gently either. "My arm is long," he warned a former partner—who understood.

The Tengen businessman was presumably the last link in a chain of dealers operating worldwide. They are not realistically calculating businessmen, but hungry wolves that snap as soon as they smell money.

The investigators presume meanwhile that Jaekle's plutonium was packed by non-experts. In the little plastic bottle with the six grams of plutonium, glass splinters were discovered. The fissionable material had apparently been in a glass that broke.

The mixture of the mercury-antimony combination, Red Mercury, is a mystery. Whoever intended to build a

bomb with such type of plutonium would have to separate the mercury by means of complicated chemical processes.

While the investigators are pondering, Jaekle serves his prison term in solitary confinement in Erding and works as a foreman. In addition, he is touchingly taking care of detained foreigners awaiting deportation.

Jaekle, who is homesick and wants to be transferred to a Baden-Wuerttemberg prison at any cost, has written 41 letters to his wife in recent weeks, even including real poems. But only a few of them have arrived—another mystery.

Kohl Addresses Issue of High Ozone Levels, Speed Limit Question

AU0208091094 Munich ARD Television Network in German 1900 GMT 1 Aug 94

[Interview with Chancellor Helmut Kohl by Wolfgang Kenntemich and Wolfgang Fandrich in St. Gilgen, Austria—recorded]

[Excerpt]

Kenntemich: Will there be a general speed limit? Will this be necessary because of the high ozone levels?

Kohl: Judging from the scientific data available to me, I have never thought that a speed limit is the right approach to solving the problem. Following this hot summer, we will certainly have a very intensive discussion on this. I do not see any reason for changing my position—I have always been against such a speed limit. But I think the signals that we are getting—a change, a hint of a change in our climate—should be taken seriously. I do not need a hot summer to realize this. During the last few days I have been thinking a lot about whether it is not our and my special responsibility to put this issue onto our agenda once again as those responsible in the European Union over the next six months. We have done more than others, also internationally speaking. But it is very difficult for people to rethink. [passage omitted]

Cleanup of Uranium Dumps on Hold

94WN0343B Duesseldorf VDI NACHRICHTEN in German No 26, 1 Jul 94 p 17

[Article by Hans Dieter Sauer: "Uranium Pollution On Hold"]

[Text] Duesseldorf—After the United States and Canada, the GDR was the third largest uranium producer in the world. As a legacy of this activity, between Dresden, Gera and Aue slag heaps cover 15 km² of land, 160 million m³ of radioactive sludge is stored in ponds and the subsoil is riddled with tunnels with a total length of 1,400 kilometers. The cleanup is proceeding very slowly, because experience with pollution of this kind is rare.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Coping with this environmental damage is the "most complicated and ambitious cleanup program in the world in the field of uranium mining," according to the evaluation in a paper by the Environment Ministry in Bonn. The task was given to Wismut which, after the reunification and the takeover of the Soviet share, was transferred to the Federal Government as a limited corporation and placed under the Economics Ministry.

Halting the uranium mining and processing has already brought about a reduction of the environmental pollution. Compared to 1989, the last "complete" production year, 75 percent less uranium and 45 percent less radium were given off with the waste water, according to Wismut's 1993 annual report, and the radon emissions from the ventilation shafts of the mines was reduced by half.

But the most difficult problems are still waiting for a solution. Most important is the fight about closing down the Konigstein mine south of Dresden. Here, Wismut wants to leach another 410 tons of uranium from the ore-containing layers before the mine is flooded. Saxon Environment Minister Arnold Vaatz (CDU [Christian Democratic Union]) has announced that he will prevent it, since leaching with sulfuric acid releases numerous toxins.

Behind the conflict hides a fundamental problem: Everything that concerns Wismut is delayed by complicated examinations of principle and concept. Due to the lengthy approval procedures, the transfer of the track dump at Ronneburg to the Lichtenberg open-pit mine has not gotten under way until now. This dump, which due to its uranium content was eluviated with sulfuric acid until 1989, represented a particularly great environmental hazard.

One is still in the preparatory phase for the most difficult cleanup task, the long-term safeguarding of the radioactive sludge ponds. At these so-called industrial settling facilities at Seelingstaedt and Crossen, north of Zwickau, is deposited the residue from the uranium production. It contains not only all the radionuclides of the uranium decay series, but in addition chemicals from the production process and arsenic. Before these "radioactive dumps," with a total volume of 160 million m³ can be permanently screened off against the environment with meter-thick cover layers, the finest sludges, up to 70 meters thick, at the center of the ponds must be drained.

At the Truenzig industrial settling facility, a drainage method is being studied in a pilot project. From a cover of geotextiles and mats, so-called vertical drains, meaning textile wicks, were pressed 5 meters down in a grid of 1.2 by 1.5 meters. "But we must obtain more clarity over the changes which take place during drainage in the body of the dump," reflects Wolfgang Goldammer, head of the Wismut Cleanup project at the Brenk Systemplanung engineering firm in Aachen.

Wismut is able to demonstrate visible cleanup successes at Schlema near Aue. In the community, which had

one-third of its area covered by excavated waste at the time the mining was halted, some dumps have already been removed, others covered over and the so-called deformed region, a large, undermined pile of rubble from the early phase of the uranium mining, has been filled in. Further, the exhaust air from the mine is no longer blown into the valley in the vicinity of the residential development, but outside the community on a hill. Following a study by the Association for Nuclear Power Technology and Analysis (VKTA), Rossendorf, the radon pollution in the Niederschlema section of the town has been reduced from between 150 and 300 Becquerel/m³ (Bq/m³) to below 100 Bq/m³. However, it is to be noted that the highest value was measured in the summer half of the year 1993 precisely at the cleaned-up Hammerberg dump.

Christina Kueppers and Gerhard Schmidt from the Eco-Institute in Freiburg have calculated, based on the dose-effect relationship for Schlema and other Wismut sites, that per 1,000 inhabitants who live there an entire lifetime a few to a few dozen additional deaths occur from lung cancer. "But in so doing the values were expanded too liberally from the measuring points to the surrounding areas," criticizes the head of the Schlema branch of the Federal Office for Radiation Protection (BfS), Winfried Meyer. One should take into account that the pollution decreases very rapidly around a radon source such as a vitiated air shaft.

According to the BfS in Salzgitter, the number of persons affected is far lower than indicated in the Eco-Institute's study. With the exception of the miners, no increase in the lung cancer rate has been determined so far in the population of the uranium region. A study of risk groups living in houses with very high radon concentration is to supply additional information.

So far, DM 3 billion have been spent out of the DM 13 billion which the Federal Government has made available for the cleanup program over the next 10 to 15 years. But this money will by no means cover all the pollution resulting from the uranium mining—the Wismut pollution from the years before 1962 falls through the cracks. In 1962, due to a new agreement between the GDR and the USSR, numerous areas where Wismut operated in the past were given back to the communities without having been cleaned up. At the behest of the BfS, this "old pollution" has been measured since 1991 by the Association for Reactor Safety (GRS) in Cologne. This "recording of old pollution" is to be available in complete form by 1996.

In the opinion of the Federal Government, in such cases the cleanup costs must be borne by the present owners. However, this position is attacked by the Saxon Environment Ministry. In so doing it is relying on an expert opinion by jurist Hans-Joachim Koch of the Research Institute for Environmental Law at Hamburg University. "According to the unification agreement, one-half of such an obligation was transferred to the Federal

Government and half to the new laender," Koch argues. Bonn is sticking to its position. The Saxon Environment Ministry is now looking for a municipality which can sue the Federal Government.

Interim Storage Sites To Be Retained for Radioactive Waste

94WN0343A Duesseldorf VDI NACHRICHTEN
in German No 26, 1 Jul 94 p 18

[Article by Martin Rothenberg: "Interim Storage Becomes Permanent"]

[Text] Ahaus—Since the change in the nuclear law, direct permanent storage is now permitted. Radioactive waste will therefore remain at the Ahaus interim storage site longer than initially anticipated.

The waste disposal costs for German nuclear power plants could be reduced by about 1 billion German marks [DM] per year after the Federal Government recognized "direct permanent storage" as a way of disposal. This is the calculation made by Heinz Seesing, energy policy spokesman for the CDU [Christian Democratic Union]/CSU [Christian Social Union] group in the Bundestag. At present reprocessing the nuclear waste costs the energy suppliers about 1.45 pfennigs per 1 kWh of generated power. The Federal Audit Office earlier reported that "according to the present level of knowledge, which the ministries involved ... have also not denied, reprocessing is regarded as twice as expensive as direct permanent storage," reports Horst Erb, spokesman for the Frankfurt authority. The disposal costs thus shrink to about 0.7 pfennigs per 1 kWh generated power for permanent storage.

However, Michael Brinkert of the German Nuclear Forum reflects that these calculations involve "momentary considerations" for final storage during periods of time stretching over centuries: "If the reprocessors lower their prices these calculations would change, just as if the uranium costs were to increase," in his opinion.

Direct permanent storage, which is accepted by the legislators and at the moment is less expensive, results in the nuclear waste initially being deposited at the two interim storage sites at Ahaus and Gorleben—for "a period of perhaps 100 years," as Heinz Seesing prematurely described it. This period of time cannot even be put into precise numbers, he subsequently corrected himself, and at the same time admitted that interim storage could last a shorter as well as a longer time.

The capacities of the Gorleben fuel element storage company (BLG) are "still pristine and empty." In the 200-meter-long, 38-meter-wide and 20-meter-high hall of the Intermediate Fuel Element Deposit in Ahaus in Westphalia (BZA), 102 containers with about 200,000 fuel elements from the closed THTR reactor at Hamm-Uentrop occupy a tiny amount of space. At the turn of

the year, when the plant is completely emptied out and another 200 containers are deposited at Ahaus, it will once again be quiet.

"We are the insurance policy for the energy supply companies, that they will be able to continue to operate their nuclear power plants," says BZA chief Peter R. Muntz. At this time, spent fuel rods are sent directly, without an intermediate stop, from the nuclear power plants to reprocessing in France and Great Britain, and the intermediate storage sites are therefore of absolutely no use as "buffers." It will not be until the old contracts that regulate this expire at the turn of the century, and are then presumably not renewed, that the nuclear waste will be placed in German intermediate storage. This task will provide BZA in Ahaus, whose operation should actually cease in 2032, with a long life, since legally required permanent storage is nowhere in sight. The energy supply enterprises only have to "make efforts" to find a location.

For this reason they are able to "afford" the DM 100 million interim storage site in Ahaus, for example, and even want to expand it. Next year a new hall is to be built, three times larger than the existing one. It will receive nuclear waste with low-level and intermediate-level radiation.

"According to the original calculations, the capacities of the two intermediate storage sites would be exhausted by the year 2007," states Munz, the head of BZA in Ahaus. But now new disposal vessels are being developed. Using them, the existing halls can be more densely packed. Finally, the energy supply enterprises are using the fuel rods longer, and less nuclear waste results. The interim storage sites will therefore have room for 10 more years. And then if the nuclear waste is being treated in the planned pilot conditioning facility, the interim storage site can accept more waste.

"Our 70 employees can retire at our plant," says BZA head Munz. Ahaus is the legally most safeguarded site in Germany. It is primarily the various complaints by the citizen initiatives that have provided this legal security. Other than that, however, Munz is demanding decisions by the parties about the future of energy production in the Federal Republic, "or we will be torn apart between the energy suppliers, the political sector and the regional interest groups."

Study Calls German Environmental Research Successes 'Modest'

94WN0343C Duesseldorf VDI NACHRICHTEN
in German No 26, 1 Jul 94 p 8

[Article by Monika Schaake: "German Environmental Research Is Ineffective"]

[Text] Duesseldorf—How effective is environmental research in Germany? For nearly a year and a half working groups from the Science Council and more than 100 experts travelled through the western laender in

order to clear up this issue. Their answer in the report now submitted: Despite the abundant flow of public monies—the Federal Government and laender spent about 1.5 billion German marks [DM] in 1992 alone—the successes are modest.

Under the leadership of marine researcher Professor Gottfried Hempel, the experts visited universities and research laboratories. They awarded particularly poor grades to the universities and major research institutes. At the large universities no one seems to really have an overview as to which institutes do what research. The wrangling for third-party funding, whether from industry, the research ministries or the German Research Association, has the result that the often invoked interdisciplinary cooperation does not function.

Technical solutions, which can be used to clean up soils or dispose of waste, are not sufficient when it comes to protecting the environment. According to the Science Council, the goal of the scientific work should instead be to avoid environmental damage from the beginning. Here there is a need not only for physicists or biologists, who eagerly take and evaluate measurement data. In order for the ecological knowledge actually to be followed by action there is also a need for economic experts, sociologists and psychologists.

The major research institutions—whether in Juelich, Karlsruhe or Geesthacht—also garnered a great deal of criticism. Although they are excellently equipped and, with nearly DM 300 million annually, haul in the lion's share of public subsidies, the environmental research conducted there yields too little. The main reason: They have sprouted into gigantic scientific parks, whose bureaucracy obstructs rather than promotes the research.

The Science Council challenges them to more competition for the scarce money. "Small is beautiful," holds true in environmental research as well. After all, smaller facilities, such as the now 81 Blue List institutes, supported jointly by the land and the Federal Government, work much more efficiently. The same applies to most of the Max Planck and Fraunhofer institutes, although they should worry more about the next generation of scientists, the council admonishes.

Meanwhile, it is questionable whether the Science Council's position alone is enough to set the German (environmental) research landscape in motion. The three-volume work with more than 1,000 pages could turn out to be a paper tiger. Because even in the now submitted version the judgement is mild compared to the working group's first draft. At the end of last year the committee still demanded the dissolution of the large research institution at Geesthacht. But the Federal Government and laender, which represent a total of 24 out of the 54 members on the Science Council, protested, and the report was rewritten. On the other hand, in 1991, when evaluating eastern German institutions, they were not so squeamish when it came to dissolving research groups.

Now, however, the Federal Government and laender for the first time want to find an environmental research advisory body, which is to provide advice regarding future strategies. It is uncertain when it will begin its work, however. Until then, it is up to the individual institutes whether to tackle environmental protection in joint projects.

Landfill Clean-Up Being Rethought Due to Cost, Competition

94WN0339A Duesseldorf VDI NACHRICHTEN
in German No 25, 24 Jun 94 p 17

[Article by Silvia von der Weiden: "An Illusion is Cured: 'Zero Value' is Unattainable in Soil Purification"]

[Text][First para is editor's summary] Duesseldorf, 24 Jun (VDI-N)—Landfill cleanup is facing a dilemma. On the one hand, unprofessional low bidders are increasingly pushing into the market. On the other hand, it is being widely recognized that earlier clean-up goals can no longer be paid for.

Cities and communities have no more money for the investigation, clean-up and securing of environmental pollution. At the same time landfill emergencies have sprung up in several places, for example in Hannover. The city will have to drop systematic landfill research completely in a few years' time. Hannover's head of the department of the environment, Hans Moeninghoff, announced during the landfill discussions which were held at the beginning of June in the capital of Lower Saxony that considering the desolate state of the budget it had been necessary to decide on this severe step.

Still, by the beginning of the year the Laender have identified about 140,000 suspected landfill sites; official estimates even assume that there are 250,000 suspect sites within the boundaries of the FRG. Rolf Mull, professor of water economy at Hannover University, sums it up this way: "We have created maximum toxin values over the last few years which have helped to form the concept of environmental quality on a very high level. But too little attention was paid to the economic aspects. Now we have to recognize that the lofty goals cannot be reached for economic reasons." The scientist bases his judgement on an exemplary study for the Hannover area, where the ground water is polluted particularly by landfills containing hydrocarbons. A careful estimate of costs shows that a complete clean-up would wipe out DM350 billion, a sum which nobody can raise.

But it is not only among the representatives of cities and communities that the call for affordable solutions is growing louder. The engineering offices which are involved in the planning and execution of clean-up projects are groaning under the immense burden of price pressures. The customers' motto can be reduced to a common denominator in more and more cases: "We have no money, do it cheaper." And since numerous

communal bids have been asked for, even countrywide, in order to make the most of the potential for low bidders in bitter competitive wars for contracts, many engineering offices are complaining about competitive distortion. "I have serious doubts as to whether serious offers can still be made without loss of quality with more and more calls for bids being made," a young engineer in Hannover reported of his experiences.

"We will have to improve the technology further in order to be able to use it even more economically," says Mull, whose own company is active in the landfill industry in an advisory capacity. While costs for the use of soil-washing facilities used to be calculated as DM200 per cubic meter, now the price has dropped to DM80 to DM100 per cubic meter. That leaves little room for manoeuvre. "We must attack the sacred cow of maximum values," Mull says challengingly. As long as the environmental goal of 100 percent cleansing of landfills is stubbornly adhered to, he says, the path to affordable clean-up is blocked.

There was no disagreement among the experts at the landfill session about the fact that things cannot go on like this. But practical alternatives are hard to find. That was drastically demonstrated in the dispute of the environmental office of the city of Hannover with the state of Lower Saxony. "The immense costs of landfill clean-up can only be met if this burden does not continue to fall almost exclusively on the shoulders of the communities," insisted Moenninghoff, the head of the department of the environment. "It is necessary that the state be significantly more involved than it has been till now." For this purpose the state would have to raise the special refuse tax again and let it be used to help the communities in landfill clean-up. Moenninghoff is flirting with the idea of levying a refuse tax on household and commercial waste in order to be able to take care of those private and industrial dumps for which the originators can no longer be called to account with a kind of "generational contract." It is true that the article of the waste legislation for Lower Saxony clearly lays down that "financial resources from the state budget be made available for completed clean-ups," but at the same time it makes it absolutely clear that "the progress of clean-up must follow the available budgetary resources." So far it is impossible to figure out which way out of the dilemma between affordability, considerations of economic strategy and ecological necessity will turn out to be feasible in the struggle between the state of Lower Saxony and the city of Hannover.

One thing is certain: radically ecologically oriented clean-up goals, in particular the restoration of the original, uncontaminated state, have no chance. Dr. Volker Mueller from the Institute of Economics for Lower Saxony says, "In my opinion after there has been a risk evaluation suspected landfill areas will have to be cleaned up or made safe in such a way that it will be possible to use them as at present or as planned in the future without reservations."

Even in the clean-up conscious Netherlands, people are beginning to think along these lines. Suggestions for the working group on soil purification commissioned by the department of the environment do not consider opening up land polluted with heavy metals as future living areas, because that would involve an overexpensive and therefore cost-intensive clean-up of the whole upper soil. On the other hand, according to the recommendations, using it as a site for offices and shops would certainly be possible, since in that case only the upper soil on the site of future green spaces would have to be cleaned up.

The Dutch working group also suggests in its intermediate report that the costs of clean-up for former gas-works and deposits be paid for in energy prices or deposit charges. In addition it was stated that the creation of clean-up funds must be considered. Whether the suggestions will meet with broad consent still remains an open question, however.

Workplace Cancer Risks Said To Be Underestimated

94WN0339B Duesseldorf VDI NACHRICHTEN
in German No 25, 24 Jun 94 p 17

[Article by Birgitt Riese: "Working Atmosphere with Long-term Effects"]

[Text] [First para is editor's summary] Duesseldorf, 24 June 94 (VDI-N)—Life is dangerous in the workplace. Chemists and artists, mechanics and masons—many have come and are coming into contact with carcinogenic substances at work. New researches indicate that the risks have been underestimated until now.

About 170,000 people die of cancer annually in the Federal Republic, and two to eight percent of the cases can be traced to carcinogenic substances in the workplace. That is the estimate of the German Cancer Society in Frankfurt. The Association of German Unions (DGB) uses significantly higher figures: "We guess that for about 50,000 cancer deaths a year the cause of becoming ill is to be found in their professional activities," says Reihold Konstanty, director of the division for environment and health in the association board of the DGB in Duesseldorf.

The statistics of the Chief Association of Industrial Professional Guilds (HVBG) in Sankt Augustin tell a different story: For the year 1992 they show only 532 job-related cancer deaths. One reason why most cancer victims don't appear in statistics for job-related illnesses is certainly the extremely long latency period. According to surveys by the HVBG, on average 16 to 40 years elapse between contact with a carcinogenic substance and the outbreak of illness. After such a long period it is usually difficult to establish a scientific connection between cause and effect. Subsequent investigations are hindered by the fact that the patients often did not even know that they were dealing with carcinogens.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

In addition, only a fraction of carcinogenic substances are on the list of job-related illnesses. Only 22 substances or substance groups which can be shown to cause cancer in human beings are recognized today as causes of a job-related illness. These include asbestos, polycyclic aromatic hydrocarbons (PAK), which are contained in rust and tar, quartz substances, nitrosamines, nickel, benzene and dust from oak or beechwood. But there are over 200 additional substances which have been shown to be carcinogenic in animal testing. In addition the risk is increased by the use of new chemicals.

Most frequently affected by job-related cancers are workers and employees in the chemical industry. According to the HVBG's statistics for cancer cases in the years 1978-1992, over 20 percent of recognized cases occurred in chemical occupations. But mechanics, workers in the construction industry, miners, painters and lacquerers as well as workers in a whole series of other occupations suffer cancers which originate in substances in the workplace. It is also clear for the HVBG statistics that in almost 88 percent of the acknowledged cancer cases the lungs, peritoneum, pleura, nose and larynx are attacked by cancer. This shows that the greatest danger is the breathing of carcinogenic substances.

How great the risk really is has been reported by the scientists of the Institute for Biophysical Radiation Research in Frankfurt. Investigations of the lungs revealed that toxic particles remain much longer in the pulmonary organs than was previously assumed. Up until now toxicologists have assumed that particles which are stored in the upper bronchial tract are carried out of the lung completely within 24 hours. Now it has been shown that after 14 days only half of the particles breathed in have been removed. "The influence of this much longer retention period is a component in the creation of bronchial tumors which we cannot neglect," says project director Dr. Willi Stahlfen. These results have decisive consequences: the risk of inhalation would have to be assumed to be about 50 times higher than before.

It is already hard enough to determine the consequences of a carcinogenic substance for the human organism. But the scientists are faced with almost insoluble problems when several substances are operating simultaneously. In most workplaces the potential danger can be limited to a few carcinogens. More recent studies show how they can influence each other. "Animal experiments have shown that doses of nitrosamines and benzene which are below threshold values can combine and cause cancer in a common target organ which would not have come about from one substance alone," explains Dr. Martin Berger of the German Cancer Research Center in Heidelberg. He suggests that such a combined effect could be significant for certain types of workers and recommends that it should be considered in the evaluation of job-related illnesses.

But until now reciprocal effects were more likely to be invoked to exclude job-related cancer cases. Thus lung cancer is still principally ascribed to smoking. "Investigations have revealed that the number of smokers is distributed almost uniformly over the whole German area," Konstanty explains. Nonetheless, he said that there are so-called "cancer islands" around river mouths in Northern Germany, for example, in which the rate of lung cancer is three times as high. This reveals a clear correlation with the working environment, since the major dockyards are located at river mouths.

Ultimately, such causal connections could only be clarified by a countrywide cancer register. But for reasons of data protection agreement on such a register is not yet in sight. As Konstanty says, "Legislators are still suppressing the problem of cancer caused in the workplace."

Constraints on Trashcan Size, Fees Lead to Illegal Dumping

94WN0339C Duesseldorf VDI NACHRICHTEN
in German No 25, 24 Jun 94 p 1

[Text] Duesseldorf, 24 Jun 94 (VDI-N)—Now that avoiding trash is the top priority of the waste business, individual trash producers must learn new habits. More and more households are being equipped with smaller containers, other communities are introducing identification and weighing by means of a microchip attached to the receptacle, so that the fees are calculated depending on the amount of trash, or the containers are simply emptied less frequently.

The other side of these innovations, which were intended as inducements to reduce trash: "Wastes are being taken out of the normal removal cycle," says Hans-Guenter Kerstan, spokesman of the board of directors of the waste removal company Edelhoff, Iserlohn. The results of this redistribution reveal themselves in a greater use of bulk pickup services and of public wastepaper baskets. But that is not all. "There are more and more wildcat dumps in forests and meadows, on street corners and in public facilities," as Kerstan summarizes the developments of the last few months. What is particularly devastating for the removal companies is the increase in false usage of used material containers as well as Yellow Barrels and Yellow Sacks. Thus he says that often 30 to 50 percent of the trash in the Yellow Barrel does not belong there—"a tendency that has increased dramatically," as Kerstan says. He says that an investigation revealed that on average in 1993 a quarter of the trash was in the wrong barrel. The costs for the sorting of such mixtures and for getting rid of the individual components are an important consideration. Kerstan says, "The removal companies will not be able to keep this up in the long term."

Difficulties in Recycling Electronic Components Detailed

94WN0337A Stuttgart BILD DER WISSENSCHAFT
in German Jun 94 pp 35-38

[Article by Rainer Kluetting: "Panning for Gold on Circuit Board Mountain"; first paragraph is BILD DER WISSENSCHAFT introduction]

[Text] Electronics recycling is developing into a lucrative market. Two million metric tons per year of electronic junk accumulates in Germany each year. The final destination of most: The domestic garbage dump. Environmental Minister Toepfer now wants to dictate recycling. However, the technical problems are immense.

On the workbench is a discarded television set—the latest thing some time ago. At one time engineers invested a lot of imagination and technical knowledge in this device. It was produced according to the state of the art in its day. That is now some eight to 10 years ago. On average, a TV set is taken out of service after that period of time. What happens next was of no interest to the engineers in those days.

At the workbench in the medium-sized company Telwest in Bretten in Baden-Wuerttemberg stands a man in red overalls with work gloves. It is his job to do what the engineers did not consider at the time of production—to keep a product which has become useless from adding to the waste problem. The tools he has for this do not look exactly high tech: Pliers, screw drivers, and a heavy hammer lie near him in a plastic shell which was left behind somewhere. Someone has scribbled "more pig feed" on it.

A drill dangles from a frame above him, and he now reaches for it. Fasteners release with a crash, chips fly. Under brute force, the home theater which was once assembled from dozens of components and extremely diverse materials becomes a pile of rubble, which is carried away by a conveyor belt: Picture tubes, housing, back wall, circuit boards, and some large parts, such as condensers and batteries. Most of them contain hazardous or even valuable materials, which are soldered, glued, molten, or otherwise mechanically bound to each other inseparably.

That is still the technical level at which recycling of electronic equipment begins—necessarily, because only recently have manufacturers given any thought to the fact that after the first life of their products there might be a second life, at least for parts of them. Now virtually all well-known PC manufacturers have a "eco" variant in their offerings, which is, among other things, easy to dismantle. Television set producers are showing their aversion to the usual mishmash of different plastics or even to plastics at all.

An impetus for this boom was no doubt the growing number of consumers who inquire what is going to happen to their no longer useful radio, TV, or computer. "Eco" is a sales argument—even here. Another impetus was the reaction of U.S. and European politicians to the growing mountains of garbage. As early as 1991, Environment Minister Toepfer presented the first draft of a "Decree Concerning the Avoidance, Reduction, and Exploitation of Wastes From Used Electrical and Electronic Devices". With the so-called Electronic Junk Decree, Toepfer would like to continue with electronics devices that he began in the packaging sector: The

introduction of the principle that the responsible person is liable. Because of industry opposition, the draft will no doubt not take effect before the elections this year. It requires that

- distributors, i.e., dealers, take back used devices;
- manufacturers in turn take these devices back from the dealers;
- devices or parts thereof are reused as much as possible.

The flood tide of trash which this decree could wash over the suppliers would in some circumstances be comparable to that with which Duale System Deutschland (DSD) is struggling in the packaging sector. According to an estimate of the Central Association of the Electrical and Electronics Engineering Industry (ZVEI), 1.5 million metric tons of used equipment accumulate annually; according to other estimates it could be as much as 2 million. Of that, 100,000 to 150,000 metric tons are computer junk, an increasing trend. Private households alone put 900,000 metric tons on the street annually, including 560,000 tons of washing machines, refrigerators, stoves, and other large appliances, 150,000 tons of TV sets, 100,000 tons of recreational electronics, and 72,500 tons of small appliances, such as mixers or clocks.

The ZVEI estimates the cost for recycling at five to 15 percent of the production costs, in some cases as much as 25 percent. The Fraunhofer Institute for Systems Technology and Innovation Research (ISI) in Karlsruhe estimates the annual sales in the recycling sector at DM2 to 3 billion. The current systems are far from adequate for future quantities. New systems and new processes are necessary. That costs more money than medium-sized waste disposal operations can usually raise.

Thus, large power companies (EVU's) such as RWE [Rhein-Westphalian Electric Works], Bayernwerk, or the Swabian Power Company (EVS) have to weather the big job. Between just 1989 and 1991, the waste disposal sector grew by 70 percent so "the coffers are well filled," as EVS Chairman Wilfried Steuer frankly admits.

The outlay for recycling of electronic devices is however high. And it is not certain that more of the environment is not consumed in it—in the form of energy and raw materials—than is returned by recyclable products and raw materials. There are no balance sheets. Three components are particularly troublesome: Picture tubes, mixed plastics, and the electronics on circuit boards.

Each year five million picture tubes are junked. They consist almost exclusively of glass, but that is the trouble. The back portion, the so-called cone glass, contains lead; there is barium in the front glass, and, moreover, it is coated with partially toxic luminescent substances. It is thus a compound material, full of toxins and heavy metals. Every month, 10,000 screen devices come under the hammer and drill at Telwest in Bretten. Not only equipment which has reached the technical end of its life span is scrapped. On the contrary, whole

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

truckloads of brand new devices which a manufacturer wants to take off the market end up at Telwest. That may make economic sense, but ecologically it is absurd—even with recycling.

At Telwest, approximately 20 men work in two shifts on "manual dismantling". The picture tubes that they have disassembled are 99-percent recycled, according to Telwest manager Trutpert Beyerle.

In this process, the screens are ground up, the metal components isolated. During the subsequent washing, the glass remains in constant motion. Ultrasound isolates the toxic materials. The rinse water is circulated in a closed loop. What remains is relatively clean glass and a toxic sludge, which must be disposed of as hazardous waste.

However, the sludge contains only the toxic screen coating. The lead and the barium are material components of the glass—they cannot be rinsed out. Monitor recycling is thus what experts in the field refer to as downcycling: The end result is a less valuable raw material, from which, for example, glass blocks are made. It is not suitable for new screens because their manufacturers need high quality glass of precisely known composition.

From a technical standpoint, recycling of circuit boards with electronic components is just as expensive. The Karlsruhe ISI estimates the annual accumulation at 25,000 metric tons. A specialist in this field is Kamet Recycling GmbH. Each year, 8,000 metric tons of electronic junk is delivered to this company in Eppingen. Here again, classification is necessary first, with manual presorting. The circuit boards which must be forwarded directly to the landfill pile up into magnificent mountains in the company yard. Because older computer boards contain highly toxic polychlorinated biphenyls (PCB's) as fireproofing agents. Their recycling is powerless.

Mercury switches, batteries containing cadmium, individual computer chips which can still be used for "one-armed bandits" and the like, and finally whole assemblies, such as computer disk drives, which can still be used are sorted out. But such direct reuse of chips and assemblies is only possible with about two percent of the devices delivered.

The remaining circuit boards are sorted again. The high quality ones among them are true veins of gold: They contain 200 grams or more of the noble metal per metric ton of junk. Such components from the delivery travel on to Hamburg, into the furnaces of Norddeutschen Affinerie.

There remain mountains of computer boards full of copper, aluminum, brass, and iron, as well as small amounts of gold and other noble metals. They are chopped and shredded. Iron and copper are expensive to isolate: Parts of motors and transformers are deep frozen

with liquid oxygen. This makes the iron brittle and it can be removed from fine coils of copper wire.

The shredder output next runs through an air separator which blows the light plastic aside. Magnets pick out the iron parts. In the rest, electrical vortices are induced to separate metal from nonmetal. On the one hand, there remains waste which contains less than 0.5 percent metal; and, on the other, a 98-percent pure metal mixture with 90 percent copper.

Norddeutschen Affinerie could reprocess the mixture into pure copper. However, in that process the aluminum contained in it would be lost, because copper is processed at temperatures of 1400°C, whereas aluminum already melts at 400 degrees. Consequently, Kamet includes an additional processing step: The copper-aluminum mixture runs over a conveyor belt at the end of which there are two containers: One nearer the conveyor belt, the other farther away. The magnetic field of a linear motor accelerates the scrap metal on the conveyor belt. At the end of the conveyor belt they flow neatly sorted into the two containers because the electromagnetic thrust acts differently on the two metals—the relationship of electrical conductivity to specific gravity being the determining factor. Manager Laage is proud of the fact that Kamet is one of five companies worldwide which use this process.

What about the plastics? Annually, 300,000 metric tons of electronic junk contributes to the huge mountain of plastic trash. Only downcycling, i.e., reuse at a lower level, is possible.

The metals, which can be fully recovered and used as raw metals, are a different story. Up to 3,000 tons of circuit boards per year are discharged by Norddeutschen Affinerie as raw copper. The high temperatures are responsible for the fact that dioxins and other organic chlorine, fluorine, and bromine compounds are destroyed. With electrolysis, the noble metals remain in the sludge and are recovered at a rate of 90 percent.

This part of the recycling of electronic junk is the most economical—as long as the boards contain a great deal of noble metal. However, their content is declining; manufacturers are using these expensive materials sparingly. This changes the economically worthwhile recovery of metals into pure waste disposal.

The large computer manufacturers were the first to react to the purchase regulations of the U.S. government and to a standard which the U.S. Environmental Protection Agency (EPA) set. In both cases the energy savings during use is foremost; however, the manufacturers are also thinking about recycling.

For example, in the IBM PS/2-E, plastic, metal, and electronics parts snap apart. All materials are said to be recyclable; paint and ozone-damaging substances are not used. According to IBM, the devices are taken back "at cost" and disposed of "by carefully selected specialized

companies according to the state of the art." Siemens-Nixdorf also offers all that with its PCD-4Ls1. It has located its own resale center in Paderborn. NCR used no chlorofluorocarbons in its "Eco-Line" PC model and labeled the plastics; the printer manufacturer NEC offers to take back its devices and expendable materials. These are only a few examples.

It was clear at the latest radio and TV exhibition that TV set manufacturers are not asleep either. Many are at least attempting to use less hazardous materials. Grundig had the original idea to make the housing from pressed scraps of tetra-pak cartons.

Loewe Opta proceeded very systematically and with the help of outside scientific know-how. Along with the Berlin "Institute for Future Studies and Technology Evaluation" (IZT), a TV set was designed consistent with energy savings and recycling. The Research Ministry participated with DM1.7 million.

The designers took the radical step based on the knowledge that plastics cannot be recycled well, but metals can be excellently. Their TV sets, which they introduced in August 1993, only have to be dismantled into two parts: The picture tube and the rest.

This complete "rest" can "ideally" be melted down in steel production. The prerequisite: The housing and the chassis are made of steel. This is not painted, but rather powder coated, which enables doing without solvents and heavy metals. The steel is even cheaper than the roughly 10 kg of plastic used in conventional sets.

Only 50 grams of plastic remain, among other things for cable insulation. Instead of plastic circuit boards, ceramic, whose residues remain in the steel furnace as "harmless slag" (according to IZT), is used. The electronic components are still problematic, at least for the time being. The manufacturers have not yet managed to deliver devices which can be used with the steel waste. Consequently, for the time being they are labeled and made readily disassemblable. If the component manufacturers cooperate, promises Loewe, the waste-disposal friendly TV set will be ready for series production in two years.

Electric Car Testing Continues on Baltic Island of Ruegen

94WS0442A Duesseldorf VDI NACHRICHTEN
in German No 26, 1 Jul 94 p 14

[Article by Ingo Reuss]

[Text] *Large-scale testing of the electric car has been going on for the past year and a half on the Baltic island of Ruegen. The German Automobile Society (DAUG), which was appointed by the Federal Ministry for Research and Technology as the project coordinator, made an interim evaluation in the last few days of how things have been going up until now: all of the 44 electric cars put into*

operation so far have proven themselves worthy in practical testing covering a total distance of more than 250,000 kilometers.

On Ruegen, the large-scale testing of electric cars is coming to the midpoint [of a program which] runs until the end of 1995. The goal of having a total of 60 test cars in trial operation has not yet been reached, but the project is already providing important information for future developments. As Frank Roux, technical director at DAUG, further explained, since October 1992 the [fleet of cars] has driven a total distance of more than 250,000 kilometers. Currently, 44 cars are involved in the trial, [and] by September the fleet should be complete. Delays have been caused by the loss of a battery manufacturer (ABB [Asea Brown Boveri]: sodium sulphur battery).

Technical problems led in part to very long periods [when some cars were] out of operation, because, as one example, replacement parts first had to be made by hand and then brought to Ruegen. Various kinds of knowledge had an influence on the work: for example, in the use of special electric connectors. Because of European standardization, these are now identical with those used in the French field test being run in La Rochelle by Peugeot and Citroen.

In addition to VW, BMW, Mercedes and Opel, the Metroline bus manufacturer Neoplan is also taking part in the German research project. The test, whose total cost is put at 40 million German marks [DM] by the BMFT [Federal Ministry for Research and Technology], is funded with DM22 million from this ministry. In the opinion of Dr. Erhard Schubert from the Technical Development Center of Adam Opel AG, a [company like] the AEG [General Electronics Group], for instance, would, as a battery supplier, "continue [the project] out of self-interest" when the BMFT funds run out.

Only German-made batteries were used, because they are superior to any others available from a technological standpoint, explained Frank Roux. The requirements for high-performance batteries have become stiffer: what is in demand are long service life, low costs, and high energy and power density. In addition, customers today would also like [a battery which is] maintenance-free, unaffected by temperature, accident-proof and environmentally acceptable. Engineers are trying to satisfy all these requirements at once.

Two main types of batteries are being tested on Ruegen: nickel-cadmium (Na/Cd) [as written] and sodium nickel-chloride (Na/NiCl₂). They can be put into any standard Opel Astra station wagon, for example, without taking up too much space. Curb weight, however, increases from 1,100 kg up to 1,300 to 1,400 kg.

The cost of a more advanced battery set may not—as with the lead acid battery available today—exceed DM2,000 to DM3,000. AEG feels it is close to putting the Zebra battery (Na/NiCl₂) into production. The travel

range (the power density is three times as great as the conventional lead battery) is already supposed to reach 120 kilometers. A pilot facility with the capacity of producing roughly 500 units annually has been making the Zebra batteries since 1993.

The average weekly driving distance of the individual electric cars is 200 kilometers, that of the electric-line busses up to 900 kilometers. The spectrum of use ranges from test drives in the Jasmund National Park to the transportation of rescue swimmers from the DLRG [German Search and Rescue Society].

On Ruegen, a satisfied driver of the electric car was also introduced. She makes a daily drive to work of around 60 kilometers from one tip of Ruegen to the other and back. Since the beginning of the test one year ago, she has put more kilometers behind her than any [of the other drivers]—with good results, she says. The car, an Opel Astra station wagon, [driven by] the forty-year old never broke down and only once had to go to the mechanic's. She is often a speedy driver: the police already spotted one of the quiet, exhaust-free cars going almost 120 km/h—100 km/h was the limit, but the police looked the other way.

She was not afraid of passing, she has already passed several trucks. Yet, because of the [car's] limited travel range of about 120 kilometers, she still has not driven any further than all over Germany's largest island (linked to the mainland by bridges). One evening she forgot to charge [the battery], and in the morning she had to resort to the car that she actually had had to "put out to pasture" during the test. Otherwise, there were no complications.

She also had no problems during the winter. The car interior is heated by a engine-independent heater, as is usually the case with electric cars. During the week she bought gas, or rather electricity, for around DM20: the same amount once more at her workplace. So she drives more cheaply than with her gasoline-powered car. For the first five years, the electric car is not taxed, the insurance premiums are low—who would steal such a car? Neighbors and friends would also be happy to participate in the test, not only to save some money. But would she also buy a car like this for herself? Certainly, with a sticker price comparable to that of a new conventional car, she would be heard from.

However, for the time being there is no "market price" for electric cars. Opel's Erhard Schubert named a "targeted cost of a maximum of DM500/kWh" for a battery set with a capacity of 15 kWh to 20 kWh, which would be sufficient for a travel range of 70 to 100 kilometers. But even then, with a battery set costing DM7,500 to DM10,000, there is much which might be said against this form of propulsion: even when it is used in a specially designed electric car, the electrically powered vehicle will still remain a product for a highly specialized market. And it is competing with cars powered by

improved internal combustion engines as well. Moreover, the electric car is currently still limited to a few types and places of use such as the inner city.

Further Steps Taken To Reduce Dioxin Emissions

94WN0338A Duesseldorf VDI NACHRICHTEN
in German No 24, 17 Jun 94 p 24

[Article by Monika Schaake: "Another Step To Reduce Dioxin Pollution"]

[Text] Bonn—Dioxins in emissions have been a central subject of discussion for years. Often, however, the pollutants get into the environment through chemicals, dyes, paper or plastics. A new regulation limits the dioxin load from products.

Until now, dioxin-containing materials were subject to the hazardous material regulation, which establishes limits for eight chlorinated dioxins and furans. In the future, the new regulation, under the umbrella of the regulation banning chemicals, will regulate the maximum content of a total of 17 chlorinated dioxins and furans and eight bromine-containing derivatives in products. Products which have higher levels may not be sold.

For one thing, the limits are new. They were drastically reduced for four compounds—for the "Seveso dioxin," TCDD, from 2 µg per kilogram to 1 µg per kilogram. Also new is the requirement that intermediate products which exceed certain limits must be indicated. During the synthesis of certain chemicals dioxins often form which, however, are no longer present in the end product. They may only be brought into circulation if the manufacturer supplies analyzed values about their dioxin content and provides the names and addresses of those companies to which he hands over these products. "With the reporting requirement we hope to get more information about these ways of synthesizing. Alternatives could then be found, which do not even generate any waste that needs to be disposed of," explains Horst Neidhard, a dioxin expert at the Berlin Environment Office. It also helps to protect the workers if, by means of analyses, all the materials with which the workers could come into contact are actually known.

But the methods for determining dioxin content are expensive and clumsy. Here, Neidhard admits, there is a "weak point" for the offices supervising the industry, which must monitor the levels.

Problems in the product range are caused primarily by vat dye stuffs for color-fast dyeing of cotton and fire-proofing for plastics, such as are found in computers and televisions. The dioxin levels do not have to be restricted immediately, however: The law gives German manufacturers transitional periods of between three and five years. The electronics industry and the chemical industry, particularly the manufacturers of textile dyes, are affected by the dioxin regulation.

"The electronics industry is satisfied with the regulation in its present form, because the transitional periods are sufficient in order to convert the production," explains Ottmar Frey of the Environmental Protection Policy division of the central organization. German appliances with dioxin-free phosphoric acid esters as fireproofing are already on the market. He is also satisfied that old equipment and its replacement parts are exempted by the regulations—he even assumes that the experts may "simply have overlooked" them in the first draft.

More critical tones are heard from the chemical industry and the textile manufacturers. Dieter Fink, technical and environmental expert at the Association of the Chemical Industry in Frankfurt (VCI), says: "After all, the consumer is only interested in the end product and not in the production process." The fact that in the future the manufacturers must analyze and indicate certain intermediate products means an additional burden for the industry, to be sure, "but the alternatives would be a total ban on the materials," according to Fink.

Nevertheless, the regulations took a long time. The rule, according to which products with more than a certain dioxin level may not be sold to end users, had been blessed by the cabinet and the Federal Council as early as the end of March 1993. But the Netherlands stopped the draft in Brussels, because they regarded the stricter German limits as a danger to the free market. The present version therefore allows a transitional period for the trade in products that may no longer be manufactured in Germany.

"The lower dioxin levels in products are another step toward the goal of reducing the exposure of the individual person to less than a billionth of a gram per kilogram of body weight and day," explains Neidhard, who was the leading figure in drafting it. Right now, according to the UBA [Federal Environment Agency], this level is twice as high for adults. Infants often accumulate four times that much because of the regionally high dioxin levels in mother's milk. Up to now, measures such as tighter rules for waste incineration facilities and the ban on certain fuel additives, so-called scavengers, have already had results. Thus, the level in mother's milk has dropped by 30 percent from 1986 until today.

Neidhard is confident that the industry is also interested in manufacturing its products in a way that is as environmentally safe as possible. After all, the storage and combustion of dioxin-laden special waste, whether from intermediate products or electronic scrap, carries with it immensely high costs.

Eco-Tax Reform Called 'Practicable'

94WN0338B Duesseldorf VDI NACHRICHTEN
in German No 24, 17 Jun 94 p 3

[Article by Christa Friedl: "Ecological Tax Reform Feasible"]

[Text] Duesseldorf—Environmental protection is a question of costs, in particular of energy costs. Slowly, but continuously, increasing energy costs could drastically reduce emissions, and while doing so create jobs and advance the modernization of Germany as an industrial site. This is the result arrived at by a study that has now been presented by the German Institute for Economic Research.

Ecological tax reform is practicable and without additional burden on the individual person, while it has a major positive impact on the environment. It would create jobs and would not result in any competitive disadvantages for Germany. These predictions were made last week not by a Green politician or an economic dreamer, but by the German Institute for Economic Research (DIW). Thus, the pleas for ecological tax reform were heard for the first time from a particularly renowned source: The Berlin institute represents one of the "five wise men," who regularly advise the Federal Government on economic and cyclical issues.

"An ecological tax reform is ecologically sensible and economically tolerable," as DIW employee Michael Kohlhaas summarized the results of a study worked out by the institute at the request of the environmental organization Greenpeace and presented last week in Hamburg.

The study focuses on energy consumption, and it does so for two reasons: On the one hand, the amount of energy consumption is an indicator of the efficiency of industrial production—the less energy consumed, the more efficient the method. On the other hand, it is an indicator of the degree of environmental pollution: The consumption of fuels exhausts the earth's resources and produces waste gases, primarily carbon dioxide as the most important greenhouse gas.

The DIW thus joins a series of other institutions which have long been demanding an ecological tax reform. One of them is the Wuppertal Institute for Climate, Energy and Environment. An annual increase in energy prices by five percent, suggested the institute's director, Professor Ernst Ulrich von Weizsäcker, as long as three years ago, would be socially acceptable, would cut down on energy consumption and thus clearly reduce emissions.

Among the proponents of this tax reform is also the Institute for Ecological Economic Research (IOEW) in Berlin, but above all the Council of Experts for Environmental Issues. According to this six-man expert committee, prices are a powerful instrument for a lasting and environmentally correct development. In its recently submitted 1994 environmental report, the environment council therefore demands "stronger implementation of economic instruments in practical environmental policy." Eco-taxes, the experts indicate, meet with acceptance if they do not increase the tax burden of the individual.

This new DIW study is based on an old formula: Saving energy by means of price. For this reason energy carriers

are taxed according to their energy content (measured in gigajoule). The tax rate is set so that a "basic price," common to all energy carriers, of nine German marks [DM] per gigajoule will be increased annually by 7 percent. Hence, regular gasoline would become 24 percent (38 pfennigs per liter in 1990 prices) more expensive in 10 years, household power 46 percent, power for industry 96 percent and light heating oil for households 73 percent (11 pfennigs per liter for each). Renewable energy such as sun, wind and water would be exempt from the tax, "so that they increase in competitiveness," according to the study.

The second leg of the reform: the refund. The ecological conversion of the tax system is revenue-neutral in the DIW's calculation example, and the energy tax could be refunded to the businesses through a reduced social contribution, and to private households in the form of an eco-bonus. Thus, only net incomes above approximately DM 4,000 would have their net costs increased; the others would be charged less. The energy tax would even have a positive effect on the economy, the DIW experts are convinced. Lowering the wage costs creates incentives "to use the labor factor to greater extent." The authors thus anticipate 500,000 new jobs within 10 years.

The tax reform would affect individual industries to a varying degree. The highest price increases would hit the iron and steel industry, the paper and cardboard-producing industry and the chemical industry. On the other hand, the machine tool industry, construction industry and several service sectors could expect price reductions—because of their high wage costs.

Implementing the tax reform according to the DIW's model would have impressive effects. "Despite an overall economic growth of 40 percent, energy consumption could drop by 24 percent by 2010 in comparison with 1987," stated the managing director of Greenpeace, Dr. Thilo Bode, when presenting the study last week in Hamburg. Carbon dioxide emissions, for example, would be reduced by 268 million tons. "There are no excuses any longer," according to Bode. Anyone who maintains that the eco-tax endangers the economy or can only be implemented together with other EU [European Union] nations "is actually pursuing an obstructionist policy."

The authors do not, in fact, worry about objections or protests from other EU nations against a German energy tax. As a consumer tax it does not face any problems, since individual states are permitted to introduce additional consumer taxes even after the internal market takes effect, insofar as "in trading they do not result in any formalities connected with border-crossing." All the experts agree on one thing: Making the resources, particularly the energy carriers, more expensive is the cheaper way in the long run even for an individual nation. Because if it were "business as usual," it would soon no longer be possible to repair the environmental damage.

Legislators See Few Alternatives To Garbage Incineration

94WN0338D Duesseldorf VDI NACHRICHTEN
in German No 23, 10 Jun 94 p 27

[Article by Martin Boeckh: "Legislators Give Alternatives to Garbage Incineration Little Chance"]

[Text] Duesseldorf—There is no way around "thermal treatment" in the future. The Technical Guide for Residential Waste leaves little room for alternative treatment methods. Nevertheless, right now a few methods which utilize the organic content in the residual waste or at least make it harmless are trying to become established.

Dumping space for household waste is scarce and expensive. For this reason the "Technical Guide for Residential Waste" (TASi) prescribes that "residual waste may only be stored until a loss on ignition of 5 percent is reached." This level can only be safely achieved through thermal treatments. Nevertheless, states such as Baden-Wuerttemberg are hoping that when the TASi is reworked in 1995 "cold" processes in the form of biological residual waste treatment can be given a chance in the ordinance.

According to general estimates from the early 1990's, residential waste contains an average of more than one-third biological waste, almost the same amount in weight of packaging materials, somewhat more than 10 percent ashes and not quite 20 percent wood, leather, textiles and bones. Meanwhile, the dual system separates out plastics, glass, paper and metals as valuable materials. What remains is called residual waste. Its composition is rather unclear and not uniform. If biowaste such as cuttings and food scraps is separated out and composted privately or transported on a large scale to the composting plant in "biotons," the residual waste still contains between five and 20 percent organic components. On the other hand, a study by the Schleswig-Holstein Technology Foundation, Kiel, arrives at a level of 38 percent biowaste; without composting, it is even said to be 57 percent.

Dumping the residual garbage represents the fastest of all possibilities. But not only is it getting more expensive to use dumping space. The biological parts of the waste lead to the creation of methane gas, which escapes into the atmosphere and as a greenhouse gas contributes to warming it. In addition, water forms, which seeps through the ground and must be eliminated at great cost or, at worst, it penetrates the bottom seal and endangers the ground water. All mechanical-biological methods therefore deal with the biological portion of residential waste.

This includes the dry-stable mass method, which was developed by Professor Klaus Wiemer of the Waste Management Department of Kassel University. Using mechanical comminution and separation methods, three flows are to be created: Minerals are separated out in the

cleanest possible form and stored separately. Valuable materials or fuels from synthetics, wood, paper and compound materials have a relatively high caloric value. This will be burned either immediately or after intermediate storage. "It has been shown that an enrichment of materials with a high caloric value to 90 percent by volume is relatively easy to achieve," explains Michael Kern, a colleague of Wiemer's.

The third portion a so-called dry-stable mass contains mainly biologically degradable materials and, hence, includes a large proportion of high-quality hydrocarbons with a high energy level. This material is to be dried through brief, intensive retting, by means of its own heat to a water content of about 15 percent. "The material has a thermal value that corresponds to that of a poor soft coal," explains Kern. Even if the dry-stable mass is blended into a dump, it will lead neither to leached water nor to the formation of dump gas. "In the long term, the method should be regarded as a supplementary method; in the short term, periods of time can be bridged until the implementation of new waste management concepts, adapted to the legislation." The method thus does not represent genuine waste treatment and much less an alternative to waste incineration, but is more of a buffer to ensure the most effective combustion possible, in the future as well. Wiemer fears that many waste incineration plants are being prematurely planned.

The first demonstration plant according to the Wiemer process is being planned by Deutsche Abfallwirtschafts GmbH in Mecklenburg-West Pomerania. The investment volume is about 15 million German marks [DM]. Depending on the preliminary treatment of the residual waste, the cost is not supposed to exceed DM 100 to 500 per ton for disposal.

The opposite way is being tried by the city of Heilbronn. With the support of the land of Baden-Wuerttemberg, a facility costing DM 40 million is being built here, in which, beginning next year, the organic portions of the residual waste will largely be eliminated with the help of bacteria. "We expect that the project will have a volume-reducing effect of 10,000 m³; we will then save about DM 3.5 million in dumping costs," estimates the head of Heilbronn's planning and building office, Thomas Ziegele. "But it does not only depend on the volume of waste, but also on the chemical reaction potential which it has to reduce," stresses Tobias Biermann, a waste technology expert at the Environment Ministry of Baden-Wuerttemberg.

A one-step and a two-step fermentation, as well as intensive retting, are being tested in three variants, each with a throughput of about 5,000 tons per year. It is based on the most extensive separation possible of residential waste into the categories of valuable materials, biowaste and residual waste. "If necessary, the method also functions without biowaste separation; then we get a higher yield of gas, but afterwards more dumping material," according to Biermann.

In the one-step fermentation, bacteria break down the organic components while deprived of atmospheric oxygen (anaerobic). The methane gas thus produced can be used for energy and will be burned in the heating plant of the city of Heilbronn. In the last step of this method the waste is dehydrated and "after-retted," that is to say further decomposed with the addition of oxygen.

In the two-step fermentation, liquids and solids are separated. While the latter are subjected to retting, a form of composting with the addition of oxygen (aerobic), the liquid components are transferred to a reactor, in which bacteria at 37°C and an alkaline environment produce methane and carbon dioxide. The intensive retting represents the third variant of the biological residual waste treatment. Here, aerobically working bacteria respire away the carbon in the residual waste as in an oversized compost heap.

Whether the Heilbronn pilot project will be able to supply sufficient arguments in favor of opening up the Technical Guide for Residential Waste to alternative methods of residual waste treatment is controversial, even at the ministry. "I am by no means optimistic enough that tangible results will be available by 1995 for the TASI to be changed. Our dump will probably not supply enough scientific facts until the year 2000," says Tobias Biermann.

The study by the Schleswig-Holstein Technology Foundation does not give the biological-mechanical residual waste treatment any chance, if only because it was not possible in principle to meet the TASI requirements for residual organic content. However, the "loss on ignition" criterion as a measure of the storage behavior of residual waste is being questioned. Mechanical-biological methods should continue to be used for reprocessing residual waste and to make better use of the existing raw materials, although only as a preliminary step for incineration.

Deal on Toxic Waste Seen as Solution to Disposal Dilemma

94WN0338E Duesseldorf VDI NACHRICHTEN
in German No 23, 10 Jun 94 p 27

[Article by Andreas Wolf: "Toxic Waste as a Way Out of the Disposal Dilemma"]

[Text] Stuttgart—Hamburg and Baden-Wuerttemberg are planning to exchange garbage. In a cooperation with the Baden-Wuerttemberg land government, the Hamburg Waste Utilization Association (AVG) will dispose of 30,000 tons of special waste. "In return, Baden-Wuerttemberg will accommodate nonreprocessable residual material from Hamburg at its land-owned dumps. Environment Minister Harald Schaefer (SPD [Social Democratic Party]) evaluates the deal as a "crucial breakthrough" for the disposal of special waste. But more and more critical voices are heard.

Baden-Wuerttemberg has long had a waste disposal dilemma: The companies in the land produce large amounts of special waste, for which the land has not a single disposal facility, however. The greater part of the toxic substances is therefore sent abroad for disposal. The contract with the AVG, signed in mid-May, is intended to change this situation. According to CDU [Christian Democratic Union] Minister-President Erwin Teufel, this cooperation assures "an economically and ecologically satisfactory disposal of special waste." Says Teufel: "The contract is an important step in order to realize the goal concepts for our waste-policy." Hans-Albert Dirrigl, managing director of AVG, is hoping that "one can opt out of" the Schoeneberg dump in Mecklenburg-West Pomerania, which has been wanted for a long time.

Initially, the barter deal is valid for a period of 15 years, and an extension for another five years is possible. However, only special waste from the Baden part of the land is to be disposed of in Hamburg—at the cost of 1,200 German marks [DM] per ton. Environment Minister Harald Schaefer anticipates that the controversial building of a special waste incineration plant at Kehl in Baden near the French border—his former constituency—will become superfluous. But the road is closed to disposal of special waste accumulating in the Wuerttemberg part of the land; for that, an incineration plant is planned for the Boeblingen/Sindelfingen area. The land government will decide about the treatment technology for this facility in the fall. Says Schaefer: "It is certain that the agreement between the AVG and Sonderabfallentsorgung Baden-Wuerttemberg GmbH makes it possible to forego building a second facility."

There are not only proponents of the waste deal in Baden-Wuerttemberg. Critical of transporting the waste is CDU delegate Hermann Muehlbeyer, among others. He says that Environment Minister Harald Schaefer is concerned solely with preventing the Kehl special waste incineration plant, for which planning permission hearings are already taking place. He is thus accusing others of doing something which he himself could not accept. Michael Sieber, chairman of the CDU party group in the land legislature, criticizes the environment minister's not very intensive negotiations with neighboring regions and laender. Under discussion has been a cooperation between Rhineland-Palatinate and BASF, Ludwigshafen, as well as with Hessische Industriemuell GmbH. But Schaefer is not able to show any concrete negotiation results as yet.

The criticism by the German Nature Preservation Association (Nabu) follows the same lines. In a joint declaration by the two Nabu land organizations, it says that the long transportation distances and the safety risks connected with that argue against the "waste tourism to Hamburg." The special waste must be incinerated and stored in neighboring laender. Harald Schaefer counters that the special waste will be transported by rail in an "ecologically favorable manner." The managing director

of AVG, Hans-Albert Dirrigl, is also convinced of that: "Shipping by rail is major plus. It is not a matter of a kilometer or two." The transportation costs will be between DM 80 and 150 per ton, according to Hans-Albert Dirrigl.

Meanwhile, the chairman of the Green party group in the Baden-Wuerttemberg land legislature, Fritz Kuhn, has doubts about the environmental disposal of the special waste at the Hamburg plant. The special waste should absolutely not be incinerated unsorted in the AVG's revolving furnace. Hans-Albert Dirrigl says about this: "By the end of 1996 the facility will have been remodeled at a cost of DM 400 million and afterwards have state-of-the-art technology. The incoming waste has been declared and will be disposed of according to the material."

But there is still no clarity about the quantity of vitrified residual materials which are to be brought from Hamburg to Baden-Wuerttemberg. This has not been precisely determined yet, says Dirrigl. "In any event it will be far less than the 30,000 tons annually agreed on in the contract," according to the managing director of AVG. According to the plans of the Baden-Wuerttemberg Environment Ministry, the residual materials will mostly be brought to a special waste dump near Heilbronn. The Greens and the CDU party group therefore fear that the period of dumping estimated at 15 years could be considerably shortened.

A major opponent of the concept is the mayor of Sindelfingen, Joachim Ruecker (SPD). For the special waste incineration plant, planned right on his doorstep in the Boeblingen/Sindelfingen area, the government originally motivated its choice of site by its being "central." But this argument is probably "dead as a doornail" by now. However, more lasting is another of Ruecker's counterargument: According to the Environment Ministry, only about 150,000 tons a year of special waste (without residual materials for reprocessing) that must be thermally treated is now accumulating in Baden-Wuerttemberg. According to estimates by the Stuttgart Special Waste Forum—a land initiative—by the year 2000 only about 80,000 tons will be produced, if the entire potential for avoiding waste and for reprocessing is being used. The experts estimate that the amount of special waste will drop particularly in the Boeblingen/Sindelfingen area. The largest toxic waste producers located there—IBM, Hewlett Packard and Mercedes-Benz—intend to reduce the 1,500 tons a year of generated waste by 75 percent by the year 2000.

State Help for Eco-Investment Detailed

94WN0338F Duesseldorf VDI NACHRICHTEN
in German No 23, 10 Jun 94 p 10

[Article by Achim Schroeder: "How the State Helps With Eco-Investments"]

[Text] Duesseldorf—The Federal Government and the laender support environmental protection projects

through low-interest loans, investment subsidies or tax relief. But the medium-sized industry hardly knows about these support programs. In the following contribution Achim Schroeder, a member of the scientific staff at Dortmund University, explains how the companies can take advantage of what the state offers.

The nearly impenetrable multitude of ecological support programs and long approval times are the reasons that many medium-sized businesses make do without government support. The processing time should be six to eight weeks, but is very often extended by the fact that the applications are not completely or correctly filled out, and, furthermore, have to undergo long approval procedures. In the future, a better job of information by the Deutsche Ausgleichsbank [German Equalization Bank], responsible for most of the programs, will help.

The government is trying, primarily by means of low-interest loans, to promote environmental protection in businesses. All the forms of special credit are being given through commercial banks, which are compensated from respective institutions such as the Deutsche Ausgleichsbank or the Kreditanstalt fuer Wiederaufbau [Reconstruction Loan Corporation]. Last year the Deutsche Ausgleichsbank approved credits for environmental protection projects in the amount of 3.6 billion German marks [DM]. Environmental protection credits thus make up nearly 30 percent of the total credit approvals. The credit approvals by the Kreditanstalt fuer Wiederaufbau amounted to DM 887 million from pure environmental programs; if specific environmental support from other program is added in, a volume of more than DM 5.3 is the result. Despite empty budget purses, no cuts are anticipated for 1994 in this sector.

It looks different for investment subsidies and tax relief measures. Since these instruments are a heavier and more direct burden on the state coffers, they have been cut. There could be changes, primarily in the tax field, after the Bundestag elections. For investment subsidies the trend is unequivocally toward those programs which

both create or safeguard jobs and benefit environmental protection. Companies should take this into consideration when they contemplate environmental protection investments.

Despite difficult and complex approval procedures, it is worth it to apply for support funds. This can be illustrated with the following example: A medium-sized carpet manufacturer (40 employees, annual turnover DM 30 million) plans extensive environmental protection investments. The reasons for this are not only ecological but also economic. The firm would like to save on resources and fees. Among other things, the vats are to be replaced, a hot pullout mechanism will be installed and a purification plant set up. With this total package one expects to save water, power and gas, as well as reduce the fees for waste water. The entire investment costs DM 1,300,000 and creates six new jobs to operate the purification plant.

The financing plan which encompasses the support funding possible for this investment, includes, besides DM 195,000 in the company's own funds, the Regional Economic Support Program (RWP) of the land of North Rhine-Westphalia [NRW], the North Rhine-Westphalian water quality program as well as the ERP [not further identified] Energy Saving Program. The planning period extends over about 10 years.

In comparison with a normal investment loan by a commercial bank, there are considerable saving potentials here. Thus, with the public subsidies the company, in a static cost estimate, saves more than DM 340,000. With a dynamic calculation the result is a positive difference in capital value of nearly DM 275,000 before taxes and about DM 150,000 after taxes (tax rate 50 percent). These savings correspond with almost the entire capital contribution by the company itself. It should be noted here, however, that the greater part of this sum is for the extra investments which are connected with creating a job. A sensible calculation base is only offered by a dynamic investment calculation that includes the savings as the specific point in time.

Low-Interest Environmental Protection Loans

	Programs	Subsidy goal	Terms		
			Subsidy in percent of investment max.	Max. amount, in thousands	Current interest rate ³
I.	Deutsche Ausgleichsbank [DtA] ¹				
I.1	ERP waste management program	Avoiding waste, waste reprocessing, waste treatment	50	1,000	6/5.5
I.2	ERP waste water treatment program	Avoiding waste water, saving water, water purification, waste water treatment	50	1,000	6/5.5
I.3	ERP air purification program	Avoiding/reducing emissions, air purification, noise, odor, vibration reduction	50	1,000	6/5.5
I.4	ERP energy saving program	Energy savings, rational energy use, use of renewable energies	50	1,000	6/5.5

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

1.5	Deutsche Ausgleichsbank environmental program	all previous support goals (preferably as supplementary funding of ERP programs)	50	10,000	6.15
1.6	Environmental protection guarantee program	Purchase investments, initial and market introduction costs by manufacturers of innovative, environmentally safe products	80	1,000	6
1.7	DtA environmental program with Environment Ministry [BMU] interest subsidy	Large-scale demonstration projects in various fields	70	—	6.5
2.	Kreditanstalt fuer Wiederaufbau [KfW] ²				
2.1	KfW environmental program	Investments to improve the environmental situation	66-75	10,000	5.75
2.2	KfW/BMU's "Demonstration Project in Environmental Protection" program	see 1.7	70	—	short-term adjustable
2.3	KfW medium-sized business program	Investments with long-term funding, such as for rational energy use	66-75	10,000	6/5.75
3.	NRW programs				
3.1	NRW water quality program	Establishment/expansion of plants to improve waste water treatment	50	5,000	short-term adjustable
3.2	Waste management and waste avoidance subsidy program	Investments to avoid and reprocess waste	75	1,500	
3.3	Emission protection program	Elimination of air pollution, noise and vibrations	60	900	4)
3.4	NRW employment-oriented subsidy program	Employment shifts which contribute to eliminate environmental pollution, preferably with labor market effect	25	900	
4.	European Community programs				
4.1	European Investment Bank (EIB) loans	Strengthening the economic and social cohesion of the Community	50	10,000 ECU	Capital market rate

As of 10 April 1994

¹ Deutsche Ausgleichsbank, Wielandstr. 4, 53173 Bonn, Tel. 0228/831-0

² Kreditanstalt fuer Wiederaufbau, Palmengartenstr. 5-9, 60325 Frankfurt am Main, Tel. 069/7431-0

³ Old/new laender or entire Federal Republic

⁴ Granting and amount depending on land interest and available funds

Work Underway at Hamburg Polytechnic College on Safe Energy Usage Described

94WN0338G Duesseldorf VDI NACHRICHTEN
in German No 23, 10 Jun 94 p 18

[Article by Lutz Bloos: "Super-Power Plant Almost Without Emissions"]

[Text] Duesseldorf—At this time an environmentally safe energy economy with hydrogen as energy carrier and storage is still far into the future. Nevertheless, scientists from various disciplines are studying methods for electrolytic production and rational use of hydrogen from wind, sun and hydroelectric power. There is a promising development at the Hamburg Polytechnic College, in which a cogeneration power plant is combined with fuel cells.

Electrical efficiencies of 75 percent and more in power plants are not feasible today even with the most modern technology. At present the upper limit lies at 55 to 58 percent power yield in the technically best gas and steam cogeneration power plants. They consist of a gas turbine, which is directly coupled to a generator, and a secondary waste-heat boiler with a steam turbine and a second

generator. But 75 to 80 percent electric efficiencies are only possible in the foreseeable future if a high-temperature fuel cell (HTFC) is added as well. A model of such a power plant was presented by Professor Wolfgang Winkler of the Hamburg Polytechnic College at the Hanover Industrial Fair.

"While fuel cell research so far has been concentrated on the development of suitable materials for high-temperature cells, we are studying the possibilities of using them in cogeneration power plants," Winkler explains. In so doing, initially various power plant configurations are being studied as to their thermodynamic efficiency. At about 80 percent electrical efficiency the result is so high that the Hamburgische Electricitaetswerke (HEW) not only supports Winkler's research, but also assumes that in 10 years the first power plant of this type could be added to the grid.

In all, four different types of fuel cells are available for power production: Alkaline with an operating temperature of 60 to 90°C, phosphoric acid (160 to 220°C), and cells with carbonate melt (660°C) or oxide ceramic (800 to 1,000°C) as electrolyte. In the oxide-ceramic high-temperature fuel cells zirconium doped with yttrium is now being used as electrolyte.

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

Electrical power is produced in all fuel cells without the bypass through combustion, steam production, turbines and generators, directly by means of "cold" combustion. The principle has been known for decades. Separated by the electrolyte, hydrogen and oxygen are conducted into separate chambers. The gas-tight electrolyte conducts ions, but no free electrons, so that a short is impossible within the cell. The electrodes for withdrawing the power are placed in the electrolytes. In the hydrogen electrode atomic hydrogen forms, which gives off electrons and is dissolved as positive hydrogen ions. At the anode negative hydroxyl ions form. If the two electrodes are combined, direct current flows, which is made usable for the grid with a DC/AC converter.

Besides hydrogen, natural gas or even coal gas can be used in the fuel cell. The natural gas is converted with steam into hydrogen and carbon dioxide, which, being pollution, should not get into the cell, because it reduces the efficiency. If natural gas or coal gas are used as fuel, the cell must have a CO₂ separator connected ahead of it.

The Federal Ministry for Research and Technology has recognized the possibility of using fuel cell technology for energy economy and has offered DM 25 million in funding by 1998. The goal is to develop high-temperature fuel cells that work with brown coal gas on a technological demonstration scale.

High-temperature fuel cells produce power at temperatures of 1,000°C and, due to the high thermal stress and corrosion of the material, at present have a lifetime of only a few thousand hours. For economic use in power plants, an increase of at least a factor of 10 is necessary. The efficiency of these cells at present is about 65 percent and is this only slightly above that of the most far-reaching gas and steam power plants.

In addition to power, however, the result is a large amount of hot air and about 1,000°C waste gas. What does one do with it? It would be wasteful simply to blow off this high-grade energy, even if the efficiency of the fuel cells is somewhat higher than that of gas and steam power plants. It was obvious to Winkler that the "waste heat" should be used in a cogeneration power plant with a gas turbine and a connected waste-heat boiler for power production.

For this purpose Winkler has designed an external cooling for the cell in which a large amount of heat is being utilized for additional processing. In addition, he has planned to extract heat from the flow of hot exhaust air which is used to preheat the fuel and the combustion air. The extracted heat is thus reintroduced into the cell and is not lost. The preheating is required because the introduction of cold air and cold fuel into the cell would lead to high thermal tensions, which would destroy the oxide ceramics. The calculations of air, fuel and heat flows for optimal power plant operation are available, and the most favorable arrangement of the individual components has also been obtained with thermodynamic calculations.

Whether the efficiencies can actually be achieved, however, must still be proved with technical demonstration facilities. Winkler anticipates "that compared to model calculation, the efficiency is about five percent below." Even so, he is confident that by the year 2010 a degree of overall efficiency of fuel cell power plants with secondary gas turbines and waste heat utilization of up to 80 percent will be possible.

While all the other components of a fuel cell cogeneration power plant are on the market in a technically mature form, and must only be adapted to the special requirements, Winkler still sees a considerable need for development in the field of the fuel cell. Both the arrangement of the cell stack and the enclosure of integrated heat exchangers for the preheating of fuel and air must largely be newly developed.

In addition to the high efficiency of future power plants, Winkler sees the advantages of his development primarily "in saving resources while using the same amount of fuel as today, and a distinct reduction of the CO₂ and pollutant emissions." "Further," according to Winkler, "we now have available the entry technology into the regenerating energy economy and the technology for a future hydrogen economy." He finds it obvious that hydrogen is produced only with power generated without CO₂.

BMW Begins Automobile Recycling Network

94P60316A Frankfurt/Main FRANKFURTER
ZEITUNG/BLICK DURCH DIE WIRTSCHAFT
in German 9 Jun 94 p 8

[Text] The Munich automobile manufacturer BMW AG has begun to build a recycling network for old automobiles in Germany. For this purpose, cooperative contracts have been concluded with Kloeckner & Co AG in Duisburg, Preussag Recycling GmbH in Hannover, and Thyssen Sonnenberg GmbH in Duesseldorf. The goal is the recovery and utilization of used BMW vehicles of all types and model years by licensed reproducers. In April, BMW, Fiat and Renault agreed to work together to recycle old cars for all of Europe. In doing so, each of the partners obligated itself to recycle the other two makes in its country as well. Besides these partners, BMW is also working with network-independent recyclers to guarantee a regional network for recovery. Regional coverage means that the last owner would be able to bring his car a reasonable distance to a processing plant. At the time of recovery, the remaining value of a particular car would be counted toward the recycling costs. As BMW further announced, a recycling plan for airbags was worked out with the Pyrotechnik Silberhuetten (PTS) Company in Silberhuetten in the Harz.

NETHERLANDS

Agrotechnical Institute Invents Degradable Bioplastic

BR0508093094 Amsterdam TECHNISCH
WEEKBLAD in Dutch 22 Jun 94 p 1

[Article by Egbert van Hattem: "Entirely Biodegradable"]

This report contains information which is or may be copyrighted in a number of countries. Therefore, copying and/or further dissemination of the report is expressly prohibited without obtaining the permission of the copyright owner(s).

[Text] Wageningen—The Institute for Agro-Technological Research, in the Department of Agricultural Research (ADO-DLO) in Wageningen, is producing a bioplastic which is made out of 100 percent starch.

With much gleeful rubbing of hands but oh, so carefully, ATO last week presented its scoop at the opening of its new main building by Queen Beatrix. The world's first bioplastic, made out of 100 percent starch, must generate "a whole range of applications." Various plastics are manufactured in part out of vegetable raw materials, and are thus biodegradable. This week the first injection-moulded product for the meat packaging industry was introduced. What kind of component it is, has not yet been divulged. The products are intended for short duration use in dry surroundings. Starch plastics are unsuitable for exposure to damp environments. Bioplastics based on oils can, however, be used in such circumstances. Spokesman Hans van der Schild expects the starch plastics to be employed in all sorts of areas.

Van der Schild said: "The production process can be shaped and be adjusted to a range of product properties." An additional advantage is that the machinery required is virtually identical to that used in the manufacture of synthetic plastics.

Companies do not therefore need to undertake any large investment if they wish to change over to the new product.

Van der Schild ventured above all to give the guarantee that the starch plastic is 100 percent biodegradable. "Certain other people pretend to be supplying biodegradable products, but these have often been made from a mixture of synthetic materials. Sometimes these plastics only contain about 30 percent vegetable material."

Together with the European Commission for Standardisation (CEN), ATO-DLO is developing standardized test methods which should produce standards for pinning down precisely the environmental meaning of "biodegradable." The results of the tests will be comparable with the NEN [Netherlands Standards Institute] standards.

ESA Develops High-Performance Solar Cell

BR0208145994 Rotterdam NRC HANDELSBLAD
in Dutch 9 Jun 94 p 6

[Article by George Beckman: "High-Efficiency Solar Cell for Use Far From Sun"]

[Text] Recently, the European Space Agency [ESA] announced that it had developed a high-efficiency solar cell. It was claimed that this cell could convert 25 percent of the sunshine in space into electricity. A report like that attracts attention, because the efficiency of solar cells used on the Earth is around 15 percent.

At the conference on solar cells held in Amsterdam in April, Japanese researchers reported that they had confirmed the attainment of a new record of 16.5 percent,

using very thin cells. Could the Europeans have made a miraculous leap forward to 25 percent?

The new solar cell was developed to provide energy for space probes that conduct research at great distances from the sun. At such distances, the sunlight is so weak that the solar cells currently available cannot generate enough electricity. A few years ago, the ESA launched a program aimed at developing (affordable) solar cells that would be able to meet these requirements. This research is being conducted under the supervision of DASA (Deutsche Aerospace).

One of the research laboratories involved is the "Solar Generators" Department at the ESTEC space center in Noordwijk. Klaus Bogus, the head of this department, immediately began by pointing out that the reported 25 percent cannot simply be compared directly with the efficiencies achieved by solar cells on the Earth. "The sunlight that we collect here has come through the atmosphere. It is both attenuated and filtered, and contains only a fraction of the full spectrum of solar radiation. In space, sunlight is not weakened in this way, and the solar cells capture the solar radiation in its entirety," he explained.

So two different standards are used when it comes to taking measurements. In addition, the Earth-based solar cells work at a temperature that is normally above—and sometimes far above—freezing point. Solar cells in space work at much lower temperatures. For instance, the temperature around Jupiter is supposedly somewhere in the region of -100°C. At that kind of temperature, all physical properties of conventional solar cells are altered.

"All this makes it extremely difficult to compare the efficiency of Earth-based solar cells with those used in space," said Bogus, adding that although attempts are being made to develop international standards with a view to enabling straight comparisons after all, not much progress has been made so far. Bogus himself has already suggested that the large ESTEC sun simulator, in which satellites are tested, be made available as the standard source.

In the past, energy supplies for space probes functioning at great distance from the sun depended on so-called RTG's [Radio-isotopic Thermoelectric Generators]. These generators, which were originally developed for military purposes, exploit the decay of radioactive plutonium. The warmth this generates is converted into electricity by thermoelectric elements. RTG's work for a very long time, a fact borne out by the fact that Pioneer-10, which was launched in 1972, is still generating electricity.

Plutonium

To begin with, this technology was not available in Europe, and later on there was thought to be little point in developing it further. Bogus said: "This would mean

that nuclear reactors designed specially to produce plutonium would have to be built. Bearing in mind the strict safety aspects involved, this would represent a project costing billions. What is more, it would also raise the problem of social acceptance." As a result, it was decided to continue developing solar cells.

The solar cell now developed by DASA-Telefunken Systemtechnik consists of two semiconducting layers of silicon. The upper edge has a rough surface and an antireflective coating, providing a maximal light-absorbing capacity. Beneath the base is a reflective layer which reflects the non-absorbed sunlight. The fine metal mesh which picks up the current masks just three percent of the light (as against five percent in conventional solar cells).

At a temperature of -100°C and with a solar constant of 0.11 (150 W/square meter), this cell achieves 25 percent efficiency. So although this percentage cannot be compared directly with that achieved by Earth-based solar cells, the ESA claims that it can talk of a "new milestone" being reached. The ESA foresees this solar cell being used to generate electricity for space probes sent far out into the solar system. This is important for the projects that the ESA has in the pipeline. And the technology may also prove to be important for space flights closer to home, or for Earth-based applications.

One of the ESA's deep space projects is Rosetta, a space probe which, early next century, will "fly alongside" a comet near Jupiter for a period of one year. Originally, this project was going to be implemented by the U.S. space organization NASA, but two years ago it announced that it would have to withdraw due to cuts. As a result, the energy source that NASA was going to provide, an RTG, was no longer available. Rosetta will now receive four solar panels, with a total surface area of 48 square meter. At the distance from the sun of Jupiter, it will supply a total electrical capacity of 472 W, more than enough to keep the probe and its measuring instruments in operation.

Experiment With Genetically Altered Bacteria Approved Despite Objections

BR0508095794 Amsterdam DE VOLKSKRANT
in Dutch 8 Jul p 6

[Unattributed article: "Field Test To Be Allowed Using Genetically Altered Bacteria"]

[Text] Amsterdam—The Ministry for the Environment (VROM) has given permission to the Research Institute for Plant Diseases (IPO-DLO) to conduct a field experiment using genetically engineered bacteria. It is the first time in the Netherlands that such an experiment will have been carried out. Until now, experiments conducted outside the laboratory have made use of modified plants.

The IPO intends to sow a small area, three by four meters in size, in Wageningen with winter wheat in

September. At the same time, genetically engineered bacteria will be added to the soil. In the genetic material of these soil bacteria, which belong to the common *Pseudomonas* strain, two genes will have been introduced from other sorts of bacteria.

One gene will make it easy to recognise the genetically altered bacteria, and to follow its growth or death. The other gene is there so that the performance of a foreign gene can be evaluated. It seems to be the case inside the laboratory, but it still needs to be demonstrated in the open field.

The aim of such basic research at IPO is in the long run to introduce genes into the genetic material in soil bacteria which have been coded for the production of certain proteins which will for instance control the voracity of the appetite of some insects. The larva of the crane fly, for instance, eats the roots of members of the grass family such as corn and wheat.

By regularly introducing such genetically engineered bacteria into the soil, it should be possible to keep an insect population under control. IPO researcher Dr. Ir. J. van Elsas expects the first proof thereof in the field within one or two years.

The test which has now been authorized in Wageningen will run for several years. Within a few months, after the winter wheat has been harvested, other crops will be planted. The intention is that the population of genetically engineered bacteria will be studied throughout the period.

In making this decision, the Environment Ministry has overruled objections raised by the Foundation for Nature and the Environment. The environmental organization says among other things that the way in which the population of genetically engineered bacteria in the soil will be observed is "hazy." IPO has gone part of the way to meet them by distributing a lengthy information document. The foundation is also afraid that the "foreign" micro-organisms might spread.

SWEDEN

EU, Swedish Environmental Policy Considered

BR0408092594 Stockholm SVENSKA DAGBLADET
in Swedish 2 Aug 94 p 4

[Article by Swedish Environment Minister Mrs. Gorel Thurdin: "EU Can Become The Driving Force Behind More Environmentally Friendly Development"]

[Text] In a "Brannpunkt" article, like this one, published on 14 July, Anna Lindh and Birgitta Dahl of the Socialist Party reported on the work being done by Sweden with a view to participating in European environmental policy. It also marked the starting point for the negotiations that Sweden successfully concluded regarding its accession to the European Union [EU]. In the same way, the Swedish Government was extremely active both before and

during the environmental conference held in Rio de Janeiro in 1992. Together with the Netherlands and the United States, Sweden ranks among the leading countries in the run-up to the 1996 Habitat Conference, which will focus on people's living environment, an issue which has great significance for the world's environmental situation in the future. It is in practical politics of this type that the result of environmental work becomes clear.

The objective of the negotiations with the EU was to find solutions that involved the highest appropriate level of environmental protection being implemented so that no standards would drop in the future. Another objective was to ensure that Sweden contributed toward tightening up the EU's environmental requirements in important areas.

Under the terms of the treaty of association, Sweden will adhere to its tighter environmental regulations wherever these currently conflict with EU regulations. At the same time, over the next four years, the EU will review its own regulations. Thus, in its negotiations on accession, Sweden succeeded in upholding its more stringent regulations, while at the same time bringing about an overhaul aimed at modernizing and tightening up the EU's regulations. It is worth noting that this is the first time the EU has been prompted to review its own internal regulations as the result of negotiations on EU accession.

The aim for Sweden with regard to European environmental work in the future is to see the highest levels of ambition applied to the environmental sector. Another important starting point is to ensure sustained development, i.e., development that satisfies daily needs without jeopardizing the opportunities open to future generations to meet their own requirements.

During the period covered by its current mandate, the Center Party has actively pursued the question regarding a seasonally adapted society with the aim of achieving the improved exploitation of resources and reduced quantities of waste. This is a concrete expression of such an attitude. Today, we are working toward these goals within a pan-European perspective by participating in the work done by the EU.

In resolutions passed at its meetings, the Center Party has expressed its support for the result of the negotiations. We believe that the EU could become a driving force behind a more environmentally friendly trend. However, we should be clear about the fact that there is no guarantee that this will happen automatically. In the end, it will all come down to us, as a nation, and together with other environmentally progressive states, proving capable of steering this development in the right direction.

The role that Sweden will play in this work will be determined, among other things, in the vote this fall, when the Swedish people will have a chance to ensure that—regardless of the result of the referendum on EU

membership—Parliament assumes a form that will indeed steer this development in the right direction. We, in the Center Party, have no hesitation in specifying the direction in which we want to see EU cooperation move—both regarding environmental policy and other areas.

Great Demand in Europe

Sweden is contributing its expert knowledge of climatic matters wherever our experience is in great demand within Europe. One important way of bringing about climatic improvements is to levy a tax on carbon dioxide emissions, as is already the case in Sweden, but not in the EU. Experience from Sweden shows that CO₂ tax has a great effect on energy consumption. This is an issue that Germany, during its presidency of the European Council, is giving very high priority regarding the work to be done in the immediate future. Sweden is making a very concrete contribution here to joint European efforts aimed at improving the climatic situation.

The EU is also working on developments aimed at preventing and reducing the volume of industrial pollution generated by companies. Here in Sweden we have had legislation in this area since 1969, and we have solid experience and useful knowledge to contribute in the sphere of European cooperation. Swedish experts are making an incisive contribution to this work on behalf of the Swedish Government.

In the chemicals sector, Sweden already has a long history of international cooperation. The wording of the treaty secured during the negotiations means that Sweden can now participate even more extensively and directly to affect developments within the chemical sector, approximating them to levels of ambition similar to our own. I would particularly like to point out Swedish experience in work done subject to the principle of substitution and the good cooperation between agricultural interest groups and environmental interest groups within our country. We are now exporting such experience to Europe.

Concrete Contribution

Recently, Sweden concluded the negotiations on participation in the activities of the European Environmental Agency. The Agency's work is aimed at describing the environmental situation in Europe. Swedish experience in the environmental sector is very highly regarded, and we are contributing to progress by passing on our knowledge regarding the satellite-based remote analysis of environmental monitoring. This is yet another concrete contribution to the environmental work being done by the EU.

Intensifying Environmental Work

Between 15 and 17 July 1994, the EU held a meeting of environment ministers in Dresden, which dealt with the EU White Paper on growth, competitiveness, and employment. As Sweden's representative, I tabled a

number of views aimed at intensifying the work done on the environment—for instance regarding the importance of imposing economic controls on the environment, where it is also necessary to proceed with reducing labor costs and instead raise the tax levied on companies responsible for pollution. Laws and regulations in the environmental sector must be reviewed in such a way as to bring about widespread responsibility within the sector.

Chances for new job opportunities can be created in the construction sector by means of work on energy management, new waste disposal systems, and finding substitutes for unsuitable materials. In order to shore up democracy and bolster the influence of citizens, the role played in planning by women and young people must be intensified. These points of view were met with great interest, and I am convinced that Swedish opinions on environmental work will prevail in the end.

Since 24 June, Sweden has been an active observer of the work done by the EU. More than one month has passed, and I believe the examples presented above point to active progress and incisive Swedish environmental work being made together with other European countries. In November, a decision will be made in a referendum as to whether this will be followed up by Swedish membership of the EU. I personally am convinced that we can best influence environmental issues if we become a party to EU decisionmaking.

TURKEY

Turkish-Libyan Ship Fined for Pollution Under New Strait Regulations

*TA0208163994 Ankara ANATOLIA in English
1605 GMT 2 Aug 94*

[Text] Istanbul, Aug 2 (A.A)—A 1594-tonne ship working under joint Turkish-Libyan ownership was fined 390 million lira [approximately \$12,000] for polluting the sea, officials said on Tuesday.

A statement from Istanbul Municipality said that it was determined that the ship "Soke" was emptying oil into the sea from its bridge.

The ship will remain anchored off Yenikapi, until the fine will be paid, the statement said adding controls are underway to prevent pollution of the sea.

Turkey last month adopted a new set of regulations for maritime passage through the straits in order to prevent accidents, and to safeguard security and protection of its citizens as well as the environment along the Bosphorus, the Marmara Sea and the Dardanelles.

According to the new regulations, ships carrying dangerous material and chemicals must warn authorities 24 hours before their passage, and no other similar ship will be allowed into the Bosphorus before the previous one exits.

UN Report Says 'Drastic Action' Necessary To Fight Global Warming

MM2507080794 London *THE INDEPENDENT* in English 25 Jul 94 p 1

[Report by Nicholas Schoon: "Global Warming Strategy 'Failing to Save Planet'"]

[Text] The Earth Summit strategy for fighting man-made global warming is doomed to failure without further drastic action, a United Nations scientific report to be published this autumn will warn.

The Intergovernmental Panel on Climate Change (IPCC), which groups 400 climate scientists from around the world, says that under this strategy levels of climate-changing "greenhouse gases" in the air will continue increasing for several centuries. Today the panel's scientists meet in Geneva to put the finishing touches to their report, a draft copy of which has been seen by the *INDEPENDENT*.

The alteration of the atmosphere, already well under way, is forecast to shift the Earth's heat balance, causing temperature rises, changes in rainfall and soil moisture content, and a worldwide rise in sea levels in the next century. More than a billion people could be affected as the Earth's population increases.

At the Rio de Janeiro Earth Summit two years ago, presidents and prime ministers from more than 100 nations signed a climate protection treaty which committed rich, developed countries to stabilise their emissions of greenhouse gases at the 1990 level by 2000. The developing world, where emissions are rapidly rising, gave no such undertaking.

Yet even if all countries stabilised their emissions, the atmospheric concentration of carbon dioxide (CO₂)—the chief culprit—would rise for some five centuries

before stabilising at more than double today's level of 355 parts per million, the report warns.

IPCC scientists say it is necessary to cut emissions by 60 per cent to stabilise the climate, but they are bound to rise for at least the next two decades. As developing countries industrialise they will increase their burning of fossil fuels, which produce most of the man-made CO₂.

The only hope is for developed countries to promise to curb emissions into the next century. Poorer nations might then accept some ceiling on their emissions.

The Third World argues that it is entitled to increase its global warming pollution because rich countries produce far more emissions and rising consumption of fossil fuels seems unavoidable if living standards are to be raised.

Western politicians consider industry, commerce and electorates unwilling to stomach changes, such as the higher fuel prices needed to reduce the developed world's CO₂ output. It took two years of difficult negotiations for rich nations to agree on even stabilising emissions by 2000.

These issues come to a head in Berlin next March at the first meeting of countries which have signed and ratified the Rio treaty. They have the chance to review progress and to amend and strengthen the treaty. The IPCC report, the latest in a series, was written to update the ministers and civil servants who will negotiate at this conference.

They may opt to put off difficult decisions by keeping the global warming threat under review for several years. Oil exporting nations, rightwing economists and energy industry lobbyists argue that climate change may be slight and gradual, and that it would be more cost-effective to adapt to these changes rather than preventing them happening in the first place.

But environmental groups say the time has come to give teeth to an ineffectual treaty in order to avoid catastrophe.

This is a U.S. Government publication. Its contents in no way represent the policies, views, or attitudes of the U.S. Government. Users of this publication may cite FBIS or JPRS provided they do so in a manner clearly identifying them as the secondary source.

Foreign Broadcast Information Service (FBIS) and Joint Publications Research Service (JPRS) publications contain political, military, economic, environmental, and sociological news, commentary, and other information, as well as scientific and technical data and reports. All information has been obtained from foreign radio and television broadcasts, news agency transmissions, newspapers, books, and periodicals. Items generally are processed from the first or best available sources. It should not be inferred that they have been disseminated only in the medium, in the language, or to the area indicated. Items from foreign language sources are translated; those from English-language sources are transcribed. Except for excluding certain diacritics, FBIS renders personal names and place-names in accordance with the romanization systems approved for U.S. Government publications by the U.S. Board of Geographic Names.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by FBIS/JPRS. Processing indicators such as [Text] or [Excerpts] in the first line of each item indicate how the information was processed from the original. Unfamiliar names rendered phonetically are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear from the original source but have been supplied as appropriate to the context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by the source. Passages in boldface or italics are as published.

SUBSCRIPTION/PROCUREMENT INFORMATION

The FBIS DAILY REPORT contains current news and information and is published Monday through Friday in eight volumes: China, East Europe, Central Eurasia, East Asia, Near East & South Asia, Sub-Saharan Africa, Latin America, and West Europe. Supplements to the DAILY REPORTs may also be available periodically and will be distributed to regular DAILY REPORT subscribers. JPRS publications, which include approximately 50 regional, worldwide, and topical reports, generally contain less time-sensitive information and are published periodically.

Current DAILY REPORTs and JPRS publications are listed in *Government Reports Announcements* issued semimonthly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 and the *Monthly Catalog of U.S. Government Publications* issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The public may subscribe to either hardcover or microfiche versions of the DAILY REPORTs and JPRS publications through NTIS at the above address or by calling (703) 487-4630. Subscription rates will be

provided by NTIS upon request. Subscriptions are available outside the United States from NTIS or appointed foreign dealers. New subscribers should expect a 30-day delay in receipt of the first issue.

U.S. Government offices may obtain subscriptions to the DAILY REPORTs or JPRS publications (hardcover or microfiche) at no charge through their sponsoring organizations. For additional information or assistance, call FBIS, (202) 338-6735, or write to P.O. Box 2604, Washington, D.C. 20013. Department of Defense consumers are required to submit requests through appropriate command validation channels to DIA, RTS-2C, Washington, D.C. 20301. (Telephone: (202) 373-3771, Autovon: 243-3771.)

Back issues or single copies of the DAILY REPORTs and JPRS publications are not available. Both the DAILY REPORTs and the JPRS publications are on file for public reference at the Library of Congress and at many Federal Depository Libraries. Reference copies may also be seen at many public and university libraries throughout the United States.

END OF

FICHE

DATE FILMED

30 AUGUST 1994